Putting the Brake on Minimum Parking Requirements: Exploring Minimum Parking Requirements and Policy Alternatives in Barrie, Ontario

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I would like to thank my parents for all their love and support throughout my post-secondary career, as well as my friends who have tolerated my parking lot rants over the past year, and Professor Ajay Agarwal whose guidance and expertise was integral in completing this report.
Glossary of Terms

Gross Floor Area
The total area of all floors in a building, with the exception of a basement in a residential building, measured from the outside face of the exterior walls, but exclusive of any part of building which is used for the storage or parking of non-automotive purpose motor vehicles or recreational motor vehicles.

Gross Leasable Floor Area
In a commercial building or development, the total floor area designed for one or more commercial tenants occupancy and exclusive use, including basements, mezzanines, and upper floors, if any; measured from the centre line of joint partitions and from outside wall faces.

Minimum Parking Requirements (MPRs)
Minimum Parking Requirements can be found in a city’s zoning code. They outline the minimum number of parking spaces required for a specific land use. The intention of MPRs is to meet parking demand and eliminate the potential for spillover parking onto adjacent land uses.

Parking Lot
A building, structure and/or lot, used for the parking of vehicles for gain or profit.

Parking Space
A portion of a building or lot use for the parking of a vehicle.

Parking Standards
Parking standards are the requirements for parking spaces found in the zoning code's minimum parking requirements. They can be expressed in a ratio of floor area to parking spaces, number of seats to parking space, or number of occupants to parking spaces.
When we look to the parking lots that cover our suburban cities empty spaces scatter the landscape. Minimum Parking Requirements (MPRs) are said to be responsible for this oversupply of parking, requiring developers to build parking spaces based upon the ratio of gross leasable floor area to parking spaces. MPRs were introduced by cities in the early 20th century during the early stages of parking lot development. The intention of MPRs was to provide a sufficient amount of parking to prevent spillover onto nearby streets. Today, parking lots are still necessary in our automobile dominated transportation system, but massive overdoses of it are not. The fact is, that at some point there are too many parking spaces and not enough buildings to create a vibrant city.

A parking lot is said to be most efficient when at least 85 per cent of its capacity is occupied. Researchers estimate that in most situations, especially suburban developments, even at peak periods parking occupancy is at most 65-80 per cent of capacity. There may only be a couple of hours during the year when peak demand is approached or at times reached. The purpose of this study is to examine the parking demand of three commercial parking lots in the City of Barrie to determine if the MPRs set out by the City of Barrie provide an oversupply of parking spaces. The three sites included in the study are:

Site #1: 450 Bayfield Street
Site #2: 11 Bryne Drive
Site #3: 555 Essa Road
This study aims to answer the following questions by conducting parking occupancy studies at the three study sites:

1. *Do the minimum parking requirements developed by the City of Barrie fail to meet the industry standard for parking lot efficiency of at least 85 per cent occupancy and subsequently create an oversupply of parking?*

2. *What parking policy alternatives are available to the City of Barrie to balance the under and over-supply of parking in suburban commercial shopping centres?*

This study relied on a literature review including the examination of previous parking studies conducted by consultants and municipalities to explore different parking occupancy study methods as well as parking policy alternatives. Six (6 hour) site visits were conducted for each parking lot to determine parking demand. Each site was visited on weekdays and weekends for the span of 6 hours (9am-3pm or 3pm-9pm). Each hour an occupancy count was conducted.

Upon completion of the parking occupancy studies [at the three sites] over the span of five months, it was found that not once did the parking demand surpass 60 per cent. In fact, all three sites provided more parking spaces than required by the City of Barrie’s MPRs and did not ever meet the parking demand of the required minimum parking spaces.

The existing policy framework of the City of Barrie was explored and a disengagement of policy goals was found between MPRs and current City policies. Accordingly, alternative policy options to MPRs to reduce the oversupply of parking are provided in Chapter 5 and case studies of cities that have chosen to adopt said policies are included.
The policy options include:

1.) Reductions to parking standard ratios in MPRs
2.) Maximum parking requirements
3.) Shared parking
4.) Site-specific parking requirements
5.) Cash in lieu

The City of Barrie is precipitously expanding with the introduction of Park Place, a large commercial center in the south-end, and is currently home to two GO Transit stations (the first opening in 2007 and second in 2012). In addition, Barrie has a rapidly increasing population and recently annexed the Town of Innisfil, further expanding opportunities for new development in the future. With increasing development and population growth it is important that the land-use is managed effectively for a prosperous future. Pragmatic parking policy reform is one of the building blocks that can help to achieve this. The preliminary recommendations for parking policy reform were divided into short, medium, and long-term policy recommendations.

**Short Term**

1. Educate decision makers, residents, and businesses about the costs of oversupplied parking. This will help to generate the required support for parking policy change
2. Explore the policy options provided in this report to determine what would work best for the City of Barrie.
3. Re-evaluate the parking standards to reflect parking demand by conducting parking occupancy studies. Make reductions to MPRs where deemed necessary.
4. Align parking policies with the goals and objectives of the City of Barrie Official Plan.
Medium Term
1. Monitor the impacts of reductions in MPRs on parking usage.
2. Introduce more flexible parking policies to encourage more efficient use of land
3. Research parking design guidelines developed by other cities to determine what would work best for the City of Barrie

Long Term
1. Continue to monitor MPRs and other policy changes to ensure policy goals are being achieved.
2. Make modifications to policies as the population and demographics of the City evolve.
3. Develop parking design guidelines to improve the pedestrian experience, the urban design of the city, encourage active transportation and discourage automobile centric design.

The final conclusion of this report is that as the City of Barrie explores the policy options outlined in this report and considers the recommendations provided, the City can create dynamic parking policies that meet the demands of the growing and changing population. In doing so they will be equipped with the resources to create a city that encourages all forms of transportation and improves livability by providing their residents with more transportation options and seeks to achieve community goals.
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The car did not destroy the city; the poorly designed places for it did, especially parking lots.- Ben-Joseph
An oversupply of parking is costly for developers, visually unattractive, and can negatively impact a city’s streetscape. Conversely, an undersupply of spaces may compromise access, circulation, and create spillover problems for adjacent uses (City of Mississauga, 1999). A parking lot is most efficient when it is at least at 85 per cent of its capacity (Chicago Metropolitan Agency for Planning (CMAP), 2012; Urban Land Institute, 2010 & City of Denver, 2010). Cutter and Franco (2012) estimate that in most situations, especially suburban developments, even at peak periods parking occupancy is at most 65-80 per cent of capacity. There may only be a couple of hours during the year when peak demand is approached or at times reached. Accordingly, it is unreasonable to build any facility that will be underutilized 99 per cent of the time (Childs, 1999).

Childs (1999) stresses that no matter how well designed our parking lots become, at some point there are too many spaces and not enough buildings to make a city.

The impacts of parking on our communities are commonly overlooked. The truth is, as it can be observed in Figure 1.1, commercial parking makes up one of the largest single land uses in our municipal footprints and therefore deserves more attention (CMAP, 2012). Cutter and Franco concluded that in commercial areas surface parking lots generally comprise about 60 per cent of the built cover (2012). In addition, while we may not realize it, decisions about parking directly affect the livability of our communities (CMAP, 2012). Thus, it is important for a city’s parking supply to strike a balance between oversupply and undersupply.

Source: Litman, 2012
Minimum Parking Requirements (MPRs)
The application of minimum parking requirements (MPRs) has been found to be responsible for the oversupply of parking spaces in many cities (Shoup, 1999). MPRs can be found in a city’s zoning by-law. The intentions of MPRs are to ensure that sites have enough parking spaces to accommodate users and prevent spillover onto nearby streets. MPRs are usually expressed as parking standards in a ratio of floor area to parking space (i.e. 1 space per 1000 square feet of gross leasable space). Many scholars believe the data available to planners to set MPRs are inadequate (CMAP, 2012; Kaplan, 2009; Shoup, 1999; Litman, 2012). MPRs for many cities are determined based on ratios given by standardized transportation manuals (such as the Institute of Transportation Engineers (ITE) Parking Generation and Urban Land Institute’s Parking Dimensions).

Sometimes cities look to nearby municipality’s MPRs or lead their own parking studies.

MPRs are configured by parking demand studies published by professional organizations such as ITE (as stated above). While these standards are assumed to be accurate, they are subjective and based on highly scattered data (Litman, 2011). Parking standards compiled by ITE do not take into account the local variables that influence parking, such as density, demographics, availability of public transit, potential for cycling and walking, or the availability of other parking nearby. The truth is all of these factors influence parking demand and should be reflected in a city’s MPRs (Environmental Protection Agency (EPA), 2012, p.13).
Parking is a local issue and there is no prescribed solution that will work for all municipalities (CMAP, 2012). When Richard Willson surveyed planning directors in 144 cities to learn how they set parking standards the two most frequently cited methods were “survey nearby cities” and “consult ITE handbooks” (1996). According to Shoup (1999) and Litman (2012) both strategies cause serious problems as nearby cities may be replicating someone else’s mistakes.

Willson (1996) maintains, that when we look to suburban commercial shopping centres, a large proportion of parking is never used; most of the excess spaces are a fiscal burden on a development project. This surplus of parking creates a dead-zone of empty parking spaces. The result is less space for offices, residential, and commercial developments to cluster together and attract more foot traffic (EPA, 2012). Furthermore, the resultant density of commercial development is lowered and can discourage alternative transportation modes to the automobile as they encourage a surplus of parking to be provided and discourage active transportation. These large parking lots are visually incoherent and make public transit less viable and attractive since the transit user must walk across a parking lot instead of being dropped off near the door or sidewalk (Benfield, 2010).

**Financial Costs of Parking**

Parking lots exert a powerful undertow on local economies by taking up space that could be put to more profitable use (Wormser, 1997, p.11). They also encourage sprawl by sending developers in search of Greenfield sites with cheap land to develop parking lots for their buildings (Fields and Brown, 2009). From a fiscal perspective, these requirements reduce a local jurisdiction’s potential tax revenue from commercial development (Willson, 1996). In addition, an oversupply of parking reduces the revenue-producing capability for a city. Underutilized parking spaces have no value to a city; they are an economic burden as the land sits empty (Willson, 1995). Excluding land costs,
as they vary within and between cities, the average cost in 2012 according to CMAP (2012, p. 35) for parking spaces can be found in Table 1.1.

**Table 1.1: Financial Costs of Parking Spaces**

<table>
<thead>
<tr>
<th>Financial Cost per Parking Space</th>
<th>Type of Parking Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4 000 - $8 000</td>
<td>Surface Lot</td>
</tr>
<tr>
<td>$12 000 - $24 000</td>
<td>Stand-Alone Parking Structure</td>
</tr>
<tr>
<td>$40 000 - $70 000</td>
<td>Automated Parking Garage</td>
</tr>
<tr>
<td>$40 000 - $100 000</td>
<td>Underground Parking Garage</td>
</tr>
</tbody>
</table>

**The Human Costs of Parking**

The reality is MPRs are not a way of ensuring "adequate" parking; they are a way of ensuring that there is more parking than people use. If excessive parking had positive externalities, this would be favorable, but instead it has negative ones—contributing to excess air pollution and traffic congestion caused by increased amounts of car trips (Yglesias, 2012; Kaplan, 2009 and Shoup, 2011). While it is beyond the scope of this report it should be noted that the strict application of MPRs further reduce the potential to build affordable housing because of the high financial costs to provide parking. In addition they hinder the potential for adaptive re-use of historic buildings is also affected as the buildings generally have minimal access to land for parking.

**The Transportation Network and the City**

As long as automobiles continue to be our primary mode of transportation parking lots will be an important part of our transportation network. Most transportation planners and engineers focus on the five per cent of the time that cars are moving. The average car is parked 95 per cent of the time and there is a lot to be learned from that 95 per cent (Shoup, 1999). Ben-Joseph (2012) suggests we cannot significantly improve the design of cities without reforming local parking requirements to emphasize the quality over quantity, how they are designed, and their impact on the built environment.

**Parking Occupancy Studies**

Parking occupancy studies assess the actual parking demand by counting the number of cars parked over a
certain period of time. Previous parking occupancy studies (Willson, 1995; Shoup, 2011; Cutter & Franco, 2012) have found that MPRs cause an oversupply of parking and exacerbate urban sprawl. Jakle and Sculle (2004) warn that the parking surplus of suburbia, which is driven by zoning by-laws, spreads activities out excessively, making things more functionally and visually disconnected.

**Research Questions**

For the study, parking occupancy studies were conducted at three shopping centers’ parking lots in the City of Barrie to determine if the City of Barrie’s MPRs provide an excess of unused parking spaces as described in the literature. Questions to be considered during the study included:

*Do the minimum parking requirements developed by the City of Barrie fail to meet the industry standard for parking lot efficiency of at least 85 per cent occupancy and subsequently create an oversupply of parking?*

*What parking policy alternatives are available to the City of Barrie to balance the under and over-supply of parking in suburban commercial shopping centres?*

**Scope of Work**

The study focuses on the parking occupancy of three commercial center parking lots to provide alternatives to MPRs and policy recommendations to the City of Barrie. Direct observation was the primary method of data collection with site visits to each parking lot spanning from mid-October to February to include occupancy rates in the fall and winter months, as well as during the holiday season (where parking demand is said to be the highest). Six site visits spanning six hours to each of the three sites (18 total site visits) during prospective peak demand and low demand parking times occurred.

The effects of parking supply go beyond the parking market as they have impacts on the housing market, travel outcomes, public health, and environmental degradation.
The report only examines the under-utilization and oversupply of parking spaces and policy recommendations to reconcile these problems. The study does not focus on the design or dimensions of parking lots. Nor does it focus on the environmental impacts of parking lots or the traffic flow patterns in parking lots.

The purpose of the report is not to provide revised MPRs and parking standards ratios for the City of Barrie, but rather provide parking policy options. Neither parking lot users nor the general public were interviewed, as the study is not about perceptions of parking supply. The research does not involve parking fees or maximum parking times and therefore license plates were not recorded and turnover rates were not calculated.

The remainder of the report is organized into five chapters. Chapter 2 will outline the detailed methodology for this study. Chapter 3 will provide a brief history on surface parking lots, MPRs and policy alternatives, and introduce the three sites where parking occupancy sites were conducted. Chapter 4 conveys the results of the three parking occupancy studies. Chapter 5 will outline the current policy framework in the City of Barrie and describe the parking policy options. The report will conclude with specific recommendations for the City of Barrie in Chapter 6 as well as ideas for future research.
Off-street parking does eat up a tremendous amount of land, but minimum parking requirements lead planners and developers to think that parking is a problem only when there is not enough of it. But too much parking is also a problem—it wastes money, degrades urban design, increases impervious surface area, and encourages the overuse of cars

– Donald Shoup
Parking Occupancy Studies as a Research Tool

Parking is a part of a larger transportation equation, parking research adds to our understanding of the impacts parking has on public policy, built form, and travel choices. Developers as well as municipalities conduct parking studies to collect data on parking demand, occupancy rates, turnover, and development impacts on the transportation system (Willson, 1996). Parking studies conducted by the public sector generally include consultation with the public as a major component to understand citizen attitudes about existing parking supply. The majority of municipal parking studies focus on publicly owned parking lots in central business districts or downtowns, and rarely is commercial suburban parking supply studied. Downtown parking studies are helpful as they do conduct parking occupancy counts as part of their studies, as well as look at best practices when completing policy reviews. Although, by overlooking suburban commercial parking supply, large land-uses that occupy vast amounts of space are being left as underperforming land.

Richard Willson has conducted a variety of parking studies in his research and believes parking occupancy counts are essential to counteract any mistaken impressions about parking occupancy (1996). Willson has found in his research that the biggest difference between parking utilization and supply is greatest in the lower-density projects that have surface parking, i.e. suburban shopping centres (1996). The Chicago Metropolitan Agency for Planning (CMAP) reiterates the importance of parking studies as a tool to gain an understanding of the existing supply and its usage to ultimately help to manage the
existing supply and reduce the need for more parking (2012).

A parking occupancy study is the most common method utilized by consultants, municipalities, and ITE to determine parking demand/ utilization. Child’s (1999) and the Urban Land Institute’s (2010) texts on parking provide recommendations for researchers interested in conducting parking occupancy counts and have been taken into consideration for this report. Davidson and Dolnick trust the most effective way to analyze parking demand is to get out in the community to look around and record information (2002). Parking occupancy studies involve assessing parking demand. This provides planners with the raw numbers for actual parking demand, instead of the perceived demand found in guidebooks. Davidson and Dolnick (2002) also believe that when you obtain information about parking occupancy in existing facilities, ask questions about the inevitability (or lack of) of similar conditions for future development you can more effectively plan for future parking.

Parking studies have recently been conducted in cities across Ontario including: City of Cambridge, Town of Whitby, City of Brockville, City of Hamilton, Town of Oakville, Haldiman County and many more. Each study includes variations of parking occupancy counts that have informed this research. Page 28 provides a detailed description of the parking occupancy study protocol can be found.

**Site Selection**

The site selection process was derived from the Institute of Transportation Engineers (ITE) guidelines to ensure the data collected for the three sites could inform the general parking utilization of commercial centers in the City of Barrie. All the selected sites have at least 85 per cent tenant occupancy, mature development (two years old or more),
ability to collect accurate parking occupancy data, and minimal to no on-site construction (ITE, 2012).

**Field Work & Data Collection**
The majority of the methods utilized in this study are adapted from IBI Group’s recent parking study in the City of Cambridge (2008). For each site parking supply inventories were created. The site plans for each site were obtained from the City of Barrie Planning Department to determine the number of parking spaces available and the gross leasable floor area. The site plan provided a visual guide for each site to accurately calculate the parking occupancy. Since site plans are property of the developer they could not be taken from the Planning Department and a site plan for the occupancy studies were created utilizing satellite images of each site.

Parking occupancy counts were conducted during peak and off-peak hours. Six (6 hour) site visits were conducted to increase the validity of the research as the majority of parking occupancy surveys consulted only conducted two (12 hour) site visits. Each site was visited on weekdays and weekends for the span of 6 hours (9am-3pm or 3pm-9pm). Upon arrival [at each site] the weather and initial number of spaces being occupied was recorded on the site plan. Every hour an occupancy count was conducted and documented on the site plan. After each site visit the data collected was inputted to the site observation sheet (Appendix D: Parking Occupancy Site Observation Sheet) and photocopies were made to ensure no data was lost.

Since individual direct observations of occupancy can be subjective each occupied space on the site plan was recorded hourly and photographs of the site were taken to triangulate observations and visually illustrate the data being collected.

Once all site visits were completed the following were calculated and inputted into charts to assist in synthesizing the information:

- The peak occupancy for each site visit
• The “mean” average percentage of spaces occupied for each hour
• Peak demand for each site

Methods for Data Analysis
The methods for data analysis were derived from Genivar’s Brockville Parking Study (2008) whereby the percentage of occupancy on an hourly basis were inputted into a graph to determine the overall occupancy averages. This allowed for the investigation of how many times the parking lots reached at least 85 per cent capacity (the industry standard of maximum efficiency). The methods chosen for numerical data analysis involve simple mathematical calculations utilizing the “mean” average for each site to ensure consistency.

The policy recommendations portion of the research focused on literature for each policy option and case studies to show examples of successful policy implementation. As an individual researcher there is potential for bias in assessing policy recommendations, providing case studies in cities with comparable characteristics to Barrie in addition to interviews with key informants aimed to counteract this.

Survey Methods
Previous research conducted by Richard Willson (1996) involved interviews with planning directors in 144 cities to gain insight into how they set parking standards. In effort to make the policy recommendations less subjective interviews with developers and planners were conducted. The purpose of these interviews was to gain insight into their professional opinion of parking standards and policies. Ethical clearance was granted in November 2012 to complete interviews. The interviewee’s were contacted via email and provided with:
• A Letter of Information (Appendix A)
• Consent Form (Appendix B)
• Questions for key informants (Appendix C)
The respondent’s names have been withheld in order to keep the anonymity and are referred to as key informants throughout the report.

**Limitations of Research**
Due to time constraints parking occupancy data was not collected during the summer and spring, which may have provided dissimilar parking demand patterns. The direct implications of the weather, temperature, and the amount of daytime sunlight can affect the way patrons access the site, but were not assessed in this study. As seasonal parking demand is beyond the scope of the direct observations of this report, it is something that could be explored further in future research.

Consultation and engagement with the public is a major part of parking standards and policy. Unfortunately, this report was not informed through public participation. As a result, the recommendations provided in Chapter 6 do not reflect the public views and (if implemented) the public should be involved as part of the process prior to implementation.

There are many factors that can influence the amount of parking spaces provided, as there are a number of players involved in the development process. Therefore MPRs represent one aspect of the determinants of parking supply and further research may need to be conducted to see what the other factors that contribute to the oversupply of parking.

For a detailed description of the Research Protocol please refer to Appendix E.
### Supplies:
- 7 copies of the site plan to record parking occupancy for each hour
- Writing tools/clip board
- Camera
- Notebook
- Automobile
- Clock

#### Procedure for each site visit:
1. Upon arrival document the number of vehicles present on the site
2. Record the weather and any patrons arriving by alternative modes of transportation (bicycle, public transit, pedestrians)
3. After each hour document the number of vehicles present on the site
4. Once completed photocopy the site plans and input the data into the computer

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**Figure 2.1: Parking Occupancy Study Protocol**
As we all know, if you're at Best Buy and need to pick something up at Old Navy, there's no way you're walking from one store to another. Instead you get in your car and drive as close as possible to the Old Navy front door. You'll even wait for a parking space to open up instead of driving to an open space just a few spaces away...not because you're lazy, but because it's such a terrible walking experience - Kaid Benfield
Chapter 3: Context

The History of the Surface Parking Lot
Changes to parking policy cannot be made if we do not understand the origins and rational for parking lots, the following section will provide a brief history of surface parking lots.

Before the car, shops were constructed on either side of the street in close proximity to the street. Alike, on-street horse and wagon parking, curb parking became a problem as buses, trucks and cars began to navigate the streets with little regulation (Ben-Joseph, 2012). As cars became increasingly used for shopping, shopkeepers began to provide parking for them behind the building, exposing the drivers to the least impressive aspect of the building, something the shopkeepers did not appreciate (McCluskey, 1987). As a result buildings started being set back to allow parking to be in the front with no attempt to disguise the parking lots as it made the store look popular.

By the mid 1900’s on-street parking became scarce and urban planners established MPRs based on the demand related to specific land-uses in order to reduce parking spillover onto streets (Kaplan, 2009). Around the 1930’s off-street parking requirements began to be attached to new building construction and written into zoning codes (Ben-Joseph, 2012). The 1940’s represented the advent of sprawling suburbs. The suburbs were built around the car as a result of the dissatisfaction automobile drivers had with the pre-automobile urban cities. Shopping centers were created as a matter of convenience and brought with them vast surface parking lots (Jakle & Sculle, 2004).
Today cars have replaced people as zoning’s main concern (Shoup, 2011). Generally, parking is regulated by local zoning by-laws. Lot design is generally based on the parking stall-size, the minimum number of spaces required to satisfy peak demand, and some interior landscaping requirements. These policies are influential to people’s daily modal choice and the urban design of a city. If we look around suburban cities, the parking lots of many commercial establishments are often bigger than the building itself (Shoup, 2011).

Off-street parking solutions may have alleviated the initial congestion caused by haphazard parking, but it has not improved the quality of our cities and public spaces (Ben-Joseph, 2012). The initial decision to enforce MPRs did solve the problem of spillover parking, but have created more unintended consequences and policy issues elsewhere. MPRs have produced no single disaster, but evidence of their harm confronts us everywhere- traffic congestion, air pollution and the orientation of the built environment around the car (Shoup, 1999). Although not the sole cause of these problems, MPRs magnify them.

**Education**

The parking lot has a profound effect on our transportation systems, and yet, little consideration has been given to its impacts in education (Shoup, 2011). As a result, many decision-makers are unaware of the costs, human and financial, of MPRs (Litman, 2012). Interviews with city officials, developers, lenders, leasing agents, and tenants by Willson (1996) revealed that most of the actors in the development process rely on the local jurisdiction to determine the amount of parking to be built (p.33).

The current Wiley Graphics Standards, a 436-page guidebook for practitioners, has a four-page section on parking lots; less than one per cent of the book is dedicated to the design of parking lots that occupy 40 per cent of our urban land (Ben Joseph, 2012, p. 7).
As a result of this gap in education and available literature there is the belief that convenient vehicle access is important for businesses and local economic development (Litman, 2012). Key informants spoke to the request by retailers during lease negotiations to provide an abundance of convenient parking to entice and keep customers from going to the competition. Thus, developers oversupply parking to have retailers occupy their buildings.

While it can be argued that MPRs are necessary for retail to thrive and employees to commute, municipalities must also evaluate their public responsibility to securing the city’s growth and public health (Kaplan, 2009, pp.35). Furthermore, when only customers that drive are thought of we are eliminating a potential pool of people that would come by other modes of transportation, but do not, because it is essentially only accessible by car (Jaffe, 2012). Municipalities also worry about future uses of a site, and want to ensure there will always be enough parking. In most cases the MPRs require enough parking for peak demand; the holiday shopping season. Building too much parking is like buying an extra refrigerator just for Christmas: useful for one day, but a waste of space and energy for the rest of the year (Willson & Roberts, 2011 & Ventura County, 2009).

Furthermore, Litman (2012) writes that reforms to existing parking standards are hindered by the belief, that, from an administrative prospective it is easiest and fairest to apply rigid standards rather than more flexible policies that may be challenged.

**Policy Alternatives to MPRs**

*Maximum Parking Requirements*

Maximum parking requirements are used to avoid over-saturation of parking supply by introducing a maximum amount of spaces to be supplied (CMAP, 2012). Maximum parking requirements outline the maximum number of parking spaces on a site. Gibbons (1999) and Willson (1995) suggest if minimum ratios are kept, they should be
used in conjunction with maximums to reduce the capability of low site density and high land consumption. In addition, it is suggested that alternative forms of transportation are available near the site when maximums are in place to provide alternative means for people to access the area (City of Hamilton, 2005; Forinash et al., 2003).

Restrictive maximum requirements can discourage development as some developers worry about the long-term marketability of building. Therefore, it is suggested that maximum requirements should be applied to a large area so all developments are under the same requirements to discourage development from potentially moving to the next city with less restrictions (Forinash et al., 2003).

Conversely, with the high costs of parking construction in mind, providing maximums can allow small businesses, which otherwise could not have afforded to build when MPRs were in place, the opportunity to do so (CMAP, 2012).

Parking maximums reduce the amount of land being consumed by parking and as a result allow more land to be utilized for development. Parking maximums also have the potential to increase the value of the land as more revenue raising buildings can be built on it (CMAP, 2012).

**Shared Parking**

Shared parking allows for multiple land uses to meet their individual parking needs through common parking spaces (ULI, 2010). Shared parking combines the MPRs of two (or more) land-uses that have alternating peak demand. When parking spaces are shared between different land-uses each space can be used more hours of the day (ULI, 2005). The resulting policy affords developers with the ability to contribute less to parking in comparison to if each land use were separated.

For example, as seen in Figure 3.1 (pg. 32), an office building and restaurant could have shared parking. The restaurant's lunch business will be enhanced by visitors
and employees of the office building and in turn not require additional parking. At night the office does not require parking spaces and during the peak demand at the restaurant spaces will be available as the office is not in use (ULI, 2010). Key informants noted that cinemas and fashion retailers have opposite peak demand times and are good candidates for shared parking.

Shared parking adjustments are also an option for developments when alternative modes of transportation (public transit, bicycle, walking) are available to users. Shared parking currently is not addressed in the zoning by-law for the City of Barrie.

Site Specific Parking Requirements

To avoid having uniform parking standards applied across the City parking demand for differing land-uses must be explored (Guo & Shuai, 2012). Site-specific parking allowances allow City staff to apply parking requirements on a case-by-case basis. They generally require developments to meet certain qualifications like reduced parking near a transit hub (City of Hamilton, 2005).

For example, Berkely, CA looks at parking on a case-by-case basis to help prevent developments from not being built because of their inability to provide the necessary amount of available parking spaces. Flexible policies allow for parking strategies to adjust to the changing needs of a community; having flexible parking policies allows the city to employ policies each as need be (CMAP, 2012). While there are advantages to examining parking requirements on a case by case basis, doing so may result in inconsistency from one project to another (Davidson & Dolnick, 2002). It

<table>
<thead>
<tr>
<th>Weekday Peaks</th>
<th>Evening Peaks</th>
<th>Weekend Peaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices, Banks, Schools, Factories, Medical clinics</td>
<td>Sports arenas, Entertainment facilities, Meeting halls, Bars and restaurants, Theatres</td>
<td>Places of worship, Parks, Shops and malls, Multiplex cinemas</td>
</tr>
</tbody>
</table>

Source: City of Hamilton, 2005

**Figure 3.1:** Peak Demand for Shared Parking Examples
also creates uncertainty to developers when trying to lease a building and can, at times, deter retailers.

Some further examples of site-specific parking allowance include built-in adjustments and land banking. Built-in adjustments allow for deviations from the requirements if they coincide with the community goals such as smart growth and intensification corridors (ULI, 2010). Land banking allows developers to provide less parking, alike cash in lieu, which will be discussed. The developer is required to save adjacent land for the future in case more parking is needed (ULI, 2010). Land banking is seen as a good transition from MPRs but regrettably the land is left tied up, as it still cannot be utilized for building space. Land banking is good for phased developments as parking can be reviewed with each phase. Land banking can also be apart of shared parking to plan for future development, but once again can limit the development potential for the site (ULI, 2010).

**Cash In-Lieu**

Given the high costs of acquiring land and constructing off-street parking property owners can choose to pay the municipalities for each space they do not construct. Cash in-lieu is generally applied in conjunction with MPRs. A cash in-lieu policy allows the developer to pay a fee in order to satisfy the MPR for a property, rather than construct the spaces required by the City (Kaplan, 2009). Due to the high costs of parking lot construction the developer generally saves money (Forinash et al., 2003).

The municipal government applies the revenue from cash-in-lieu to municipal expenses that are generally for public parking spaces and other transportation initiatives. Cash in lieu helps to concentrate parking, promote shared parking, and provide the City with the ability to reduce the number of new parking spaces (Davidson & Dolnick, 2002; Kaplan, 2009 & Forinash et al., 2003).
Cash in lieu should not be relied upon as a source of income for the city as they can be beneficial when there is rapid development, and problematic when there is little development (Davidson & Dolnick, 2002).

**Market Driven**

Some cities are experimenting with the idea of letting the market decide what is the appropriate amount of parking in certain districts. In Los Angeles, a new mixed-use development with close proximity to transit was approved with no parking minimums or maximums (Brasuell, 2012).

Anderson (2013) suggests if we let the market decided the amount of parking, then where more parking is needed, it will be built, and where less parking is needed, less will be built. MPRs essentially allow developers to build as many spaces (within reason) as they want to; they force more parking than people actually want to provide as well as use, whereas market driven policies allow the developer to choose the amount. Given the high cost of providing parking, developers have an incentive to build what they consider to be the minimum amount needed to satisfy customers (CMAP, 2012). The unintended consequences of market driven policies can be retailers and developers thinking they need more parking than necessary, leaving a municipality with the similar MPR issues.

**Parking Lot Design Guidelines**

While it is beyond the scope of this project to take an in depth look at design guidelines as the intent of this project is to look at reducing the oversupply of parking, it is important to note the importance of design guidelines in mitigating the negative effects parking lots have on the urban design of cities. Poor design can create unattractive areas that do not feel safe, long walking distances between activities and opportunities for conflicts between cars and pedestrians (City of Hamilton, 2005). Donald Shoup (1999) suggests, “planners should regulate many other features of parking that affect the community, such as aesthetics,
landscaping, layout, location, pedestrian access, accessibility, setback, signage, and stormwater runoff” (p. 570). Key informants believed that design guidelines are a practical approach to making parking lots pedestrian scaled and aesthetically pleasing.

In addition, the draft Intensification Area Urban Design Guidelines (2012) as well as the City of Barrie Official Plan (2011) outline some general design guidelines for parking lots to reduce the negative environmental and human effects of parking lots (2012).

**City of Barrie Characteristics**
The City of Barrie is located in Southern, Ontario in the County of Simcoe. Over 6.2 million people live within a 160 km radius of the City (Government of Canada, 2012). Barrie is approximately 90 km north of Toronto within the Greater Golden Horseshoe sub-region and a one-hour drive from Pearson International Airport (Government of Canada, 2012). Development within the City has radiated outward from the historical downtown central business district, located along the waterfront of Lake Simcoe. A significant amount of suburban development has spread into the periphery of Barrie (City of Barrie, 2011). Many residents of Barrie commute to Toronto for employment. The City of Barrie currently has two GO Transit stations, (the first opening in 2007 and second in 2012) increasing access to the Greater Toronto Area. The City recently annexed the Town of Innisfil, (2,293 additional hectares of land for development) further expanding opportunities for new development in the future (City of Barrie, 2011).

According to the 2011 census the population of Barrie is 136,063 making it the 21st largest CMA in Canada. Barrie is also one of the fastest growing census metropolitan areas (CMA’s) in the country with a growth rate of 4.9 per cent (Government of Canada, 2012). 68.5 per cent of the population is working age 15-64 (Government of Canada, 2011). The median age of the population in Barrie is 37.2,
making it the youngest CMA in Canada (City of Barrie, 2011).

Between 2005 and 2009 Barrie had the third highest non-residential building permit growth in Ontario along with a 20 per cent job growth between 2001 and 2006 (City of Barrie, 2011). 27 per cent of business is in the knowledge-based sector, making Barrie the 5th smartest City in Canada (City of Barrie, 2011). The City of Barrie also attracts young talent, as it is home to Georgian College as well as a satellite campus of Laurentian University. Both are located in Barrie’s north end.

Barrie’s central location in conjunction with large population growth has played a large part in the vast development of retail and commercial centres to serve Simcoe County and the surrounding area as a regional centre for institutions, facilities and services (City of Barrie, 2011). The sector strengths of Barrie include advanced manufacturing, automotive technology and the food and beverage industry (Government of Canada, 2012). The provincial Growth Plan has identified that the target population of Barrie by 2031 to be 180 000 (City of Barrie, 2011). Highway 400, 11, and 26, and County Roads 4, 27, 30, 40, 54, 90, and 93 all meet in the City providing sound transportation connections into Barrie from surrounding municipalities (City of Barrie, 2011). 90 per cent of Barrie residents drive to work, while 3 per cent take public transit and 4 per cent walk or bike (Government of Canada, 2012).

Figure 3.2: **Barrie and the GTA: Barrie is located 90 kilometers north of Toronto along highway 400**
Figure 3.3: Map of Barrie: Location of 3 Sites and their proximity to the Central Business District
Commercial Parking Policy & Standards in the City of Barrie
Zoning by-laws typically include parking standards formulas for determining how many parking spaces must be provided for specific types of land uses; they may also cover parking layouts (size of parking stall spaces and width of aisles). The parking requirements of a city can change over time and zoning by-laws are often the last element in the planning process to be adjusted (ULI, 2010).

The current zoning by-law for suburban commercial development in the City of Barrie is divided into two categories C3, Shopping Center Commercial and C4, General Commercial. The MPRs for these establishments are excerpted from Table 4.6 of the Zoning By-Law 2009-141 and can be found below in Table 3.1 (a comprehensive list of parking standards can be found in Appendix E).

Table 3.1: City of Barrie Zoning By-Law Excerpt

<table>
<thead>
<tr>
<th>Commercial Use otherwise not defined/Wholesale Establishment</th>
<th>1 space per 50m² of gross floor area with a min. 2 spaces</th>
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<tbody>
<tr>
<td>Shopping Center</td>
<td>1 space per 18.6m² of gross leasable</td>
</tr>
<tr>
<td>Retail Store/Bank/Convenience Store</td>
<td>1 space per 30m² of gross floor area with a min. 2 spaces</td>
</tr>
<tr>
<td>Restaurant</td>
<td>1 space per 2 persons</td>
</tr>
</tbody>
</table>

Current City of Barrie Zoning By-Law for Parking

Section 4.6.2 Parking of the Zoning By-Law 2009-141

States:

4.6.2.1 Parking

Parking spaces shall be provided and maintained in accordance with the following requirements and shall be provided on the same lot as the building or use for which they are required.

4.6.2.2 Number of Parking Spaces

Parking spaces required for each permitted use shall be provided in accordance with Table 4.6. For commercial and industrial buildings, where tenant mix is not known, the initial requirement shall be 1 space per 50m² of gross floor area.

4.6.2.3 Parking Based on Occupancy

Where parking provisions in Table 4.6 relate to spaces per person or student, this shall be calculated based on the maximum number of persons which can be accommodated within the use according to the Ontario Building Code, as amended, unless otherwise specified.
4.6.2.4 Parking- Multiple Uses

Where there are 2 or more permitted uses in any building or on any lot, the parking requirements for each use shall be calculated separately and the individual requirements combined. The total number of parking spaces so calculated shall be provided and maintained.

Previous Parking Studies in Barrie

The City of Barrie has conducted various parking studies as depicted in Table 4.1. These parking studies have focused their attention to the central area commercial zone (C1), Barrie’s downtown core, waterfront, and surrounding intensification corridors. Currently C1 (downtown) is omitted from the parking requirements outlined in the zoning by-law. While these parking studies provide useful information for parking policy reform, they focus on the downtown and not the commercial suburban land-use in Barrie.

<table>
<thead>
<tr>
<th>Study</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>2005 Barrie Waterfront Parking Study</td>
<td>Additional parking in the core waterfront area, paid parking and time limits</td>
</tr>
<tr>
<td>2007 Downtown Barrie Parking Study</td>
<td>Monitor parking demand needs downtown, no new municipal parking, sell surplus parking lots to developers, replace angled parking with parallel parking and 24/7 parking fees</td>
</tr>
</tbody>
</table>
**Site #1 450 Bayfield Street**

**Zoning Code:** C3 Shopping Centre Commercial and C4 General Commercial

This development was built in conjunction with a zoning by-law (85-95) that is no longer in use. The development was built by SmartCenters!. The current tenants include a variety of retail establishments, restaurants, and medical services. The site was subject to C3 (18.6 m² = 1 space) and C4 (30 m² = 1 space) in the zoning code. The gross leasable floor area (GLA) at the time of the development was 17 584 m². The minimum number of spaces required for the development was 1098 and 1109 were provided. A recent Intensification Study completed in 2009 found this site to be located along one of the five intensification corridors located in the City of Barrie.

**Above Right: Figure 3.4:** Site 1 Site Plan: 1109 parking spaces provided for the site with multiple points of access. The transit stop is located on the southeast corner of the site, where the stoplight is located.

**Right: Figure 3.5:** Ariel View of Site 1: The site is at about 50 per cent capacity with a majority of the vehicles parked in front of the Wal-Mart.
grocery. The site was subject to the C3 ordinance (18.6 m² = 1 space) for shopping and the entire site was applied at this rate. A variance was provided to the developer at 1 space per 23.5 m². The GLA was 29 490.7 m². The minimum number of spaces required for the development was 1386 and 1758 were provided.

Above: **Figure 3.6**: Site 1 Zoning Map: 450 Bayfield Street is zoned for C3 and C4.

Right: **Figure 3.7**: Ariel View of Site 2: The parking lot is at about 30 per cent capacity. The black highway to the right of the site is Highway 400 that connects Barrie to Toronto.

**Site #2 11 Bryne Drive**

**Zoning Code**: C3 Shopping Centre Commercial

This development was built in conjunction with a zoning by-law (85-95) that is also no longer in use. The development was built by RioCan and the current tenants include a bank, large retail, home-improvement, and
**Figure 3.8: Site 2 Site Plan:** 1758 parking spaces are available on the site. The parking lots are connected at the rear of the commercial establishments. Building E and F are not built and available for future development.
Site #3 555 Essa Road  
Zoning Code: C3 Shopping Centre Commercial

The site was subject to the C3 zoning ordinance as a result of the unknown future commercial uses at the time of development. The GLA was 10,344.4 m². The minimum number of spaces required was 347 and the developer provided 561. The current tenants include medical services, restaurants, small-scale retail, grocery, and a gym.

Figure 3.10: Ariel View of Site 3: Multiple access points connect the site to the surrounding residential and arterial roads. The parking lot appears to be at about 30 per cent capacity with capacity spread out across the site.

Figure 3.11: Site 3 Zoning Map: The entire site is subject to C3 shopping centre commercial zoning within the surrounding residually zoned area.
**Figure 3.12:** Site 3 Street View: South End of Site 3 from Essa Road showing sidewalk access to the site.

**Figure 3.13:** Site 3 Street View: North end of Site 3 from Essa Road with the majority of parking demand in front of the grocery store.
Chapter 4: Data Analysis

Through examination of parking occupancy summaries (found on pages 52, 53 and 57) on all three sites it can be concluded that there is an oversupply of parking in suburban commercial developments. Not once did the parking supply at any of the sites surpass 60 per cent usage, none of the sites managed to come close to the ideal 85 per cent.

Each site provides more parking than required by the City’s MPRs. Accordingly, when the occupancy for each site is examined, not once did the demand surpass the MPR outlined in the zoning code. We can conclude that the MPRs require more parking than actual demand, and by allowing developers to provide more parking an even greater oversupply of parking exists. Furthermore, the snow that was removed from the parking lots was piled up and utilized parking spaces for storage.

The snow did consume some of the parking supply but did not impede the parking demand and create spillover. This is interesting because the City of Barrie requires developers to account for seasonal sales pavilions that utilize parking spaces in the spring in summer months but not for snow storage.

Detailed Parking Occupancy Study Results
A summary of key findings of the observations made while conducting the occupancy study can be found below.

Site 1: 450 Bayfield Street
Site 1 had the highest parking occupancy levels of all three sites. During the occupancy studies some of the patrons were found to be arriving by public transit located along the exterior of the site and walking diagonally across the parking lot to access the retail. No patrons were witnessed walking from one store to another. The Wal-Mart attracted the majority of the parking demand and patrons parked as close to the front of the store as possible. The McDonalds also contributed to the demand for parking at all times throughout the day. The restaurant located on site had minimal demand during the lunch hour and the majority of the demand after 5 pm. Bike racks were located at the
Wal-Mart entrance but were rarely utilized. Snow removal did not impede traffic or sightlines. The snow that was removed was stored along the perimeter of the lot.

The parking demand for Site 1 was the highest at the 13:00 hour as depicted in Figure 4.1. Site 1 was found to have an overall higher demand for parking on the weekends. By looking at Figure 4.3 it can also be observed that during the holiday season the demand for parking increased to about 50 per cent throughout the day but did not come close to the ideal 85 per cent of capacity.
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**Figure 4.3:** Site 1 Parking Occupancy Results
**Figure 4.4: Site 2 Parking Occupancy Results**

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<td>7%</td>
</tr>
<tr>
<td><strong>Saturday December 15th 2012</strong></td>
<td>438</td>
<td>447</td>
<td>409</td>
<td>335</td>
<td>265</td>
<td>226</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>25%</td>
<td>23%</td>
<td>19%</td>
<td>15%</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Friday February 15th 2013</strong></td>
<td>270</td>
<td>287</td>
<td>289</td>
<td>307</td>
<td>276</td>
<td>257</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>16%</td>
<td>16%</td>
<td>17%</td>
<td>16%</td>
<td>16%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Site 2: 11 Bryne Drive
Site 2 had the lowest occupancy rates of all three sites. It is assumed that since MPRs are based on floor area the excess parking spaces can be a reflection of the majority of the retail uses on the site are big box/warehouse style. In fact on the site one of the parking lots were only partially plowed after snowfall this left about half of the parking lot snow covered. Bike racks were located at a sporting goods store but were rarely utilized. No patrons were witnessed arriving on foot or by public transit.

Figure 4.5: Site 2: Retail Warehouse Snow Covered Lot

Figure 4.6: Site 2 Occupancy Rates 9:00 – 15:00

Figure 4.7: Site 2 Occupancy Rates 15:00 – 21:00
The grocery store attracted the majority of the parking demand. The grocery store parking lot also had signs located on the perimeter prohibiting park and ride and overnight parking. The majority of bank patrons utilized the drive-thru ATM and as a result the demand for parking was low.

Alike Site 1, Site 2 had the highest parking demand at the 13:00 hour. The parking demand was also higher on the weekends in comparison to the weekdays. The site was slightly affected by the holiday shopping season as the parking demand did increase minimally but, at peak, it was only 25 per cent capacity.

**Site 3: 555 Essa Road**

Site 3 is located along an arterial road and therefore provides a mix of retail and services for residents. The public transit was located in close proximity to the entrance of the grocery store and therefore some patrons arrived by public transit and were able to access the retail via the shopping centre sidewalk (As seen in Figure 4.11). A few patrons were witnessed walking to the site as sidewalks were located along the perimeter on the north and south side. The Tim Hortons attracted a lot of automobile traffic and the majority of patrons utilized the drive thru instead of parking and walking inside.

The grocery store attracted the majority of the parking demand and patrons parked as close to the entrance as possible. Snow removal impeded sight lines as it was piled in the middle of the parking lot (as seen in Figure 4.8).

![Figure 4.8: Site 3: Sightlines impeded by on site snow piles](image-url)
Alike Site 1 and Site 2, the peak parking demand for Site 3 was around the 13:00 hour. Parking demand was fairly evenly distributed and no real change in demand was seen when comparing weekdays and weekends.

When we look to Figure 4.9 and 4.10 Site 3 tended to have a higher parking demand during 9:00-15:00 in comparison to 15:00-21:00. In addition, Figure 4.12 shows no real change in parking demand for the holiday season.

Above Left: Figure 4.9
Site 3 Parking Occupancy Rates 9:00 – 15:00

Above Right: Figure 4.10
Site 3 Parking Occupancy Rates 15:00 – 21:00

Left: Figure 4.11: Site 3:
Transit stop and sidewalk along the North perimeter

Source: Google Maps, 2013
### Figure 4.12: Site 3 Parking Occupancy Results

#### Site #3: 555 Essa Road (9:00 - 15:00) 561 Spaces

<table>
<thead>
<tr>
<th>Observation Date</th>
<th>9:00</th>
<th>10:00</th>
<th>11:00</th>
<th>12:00</th>
<th>13:00</th>
<th>14:00</th>
<th>15:00</th>
</tr>
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<tbody>
<tr>
<td>Monday October 29th 2012</td>
<td>117</td>
<td>139</td>
<td>157</td>
<td>208</td>
<td>205</td>
<td>209</td>
<td>184</td>
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<tr>
<td></td>
<td>21%</td>
<td>25%</td>
<td>28%</td>
<td>37%</td>
<td>36%</td>
<td>37%</td>
<td>33%</td>
</tr>
<tr>
<td>Sunday November 25th 2012</td>
<td>126</td>
<td>119</td>
<td>203</td>
<td>199</td>
<td>211</td>
<td>187</td>
<td>193</td>
</tr>
<tr>
<td></td>
<td>23%</td>
<td>22%</td>
<td>37%</td>
<td>36%</td>
<td>39%</td>
<td>33%</td>
<td>34%</td>
</tr>
<tr>
<td>Saturday February 16th 2013</td>
<td>87</td>
<td>99</td>
<td>162</td>
<td>204</td>
<td>216</td>
<td>227</td>
<td>238</td>
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<tr>
<td></td>
<td>16%</td>
<td>18%</td>
<td>29%</td>
<td>36%</td>
<td>39%</td>
<td>40%</td>
<td>42%</td>
</tr>
</tbody>
</table>

#### Site #3: 555 Essa Road (15:00 – 21:00) 561 Spaces

<table>
<thead>
<tr>
<th>Observation Date</th>
<th>15:00</th>
<th>16:00</th>
<th>17:00</th>
<th>18:00</th>
<th>19:00</th>
<th>20:00</th>
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<td>168</td>
<td>211</td>
<td>178</td>
<td>152</td>
<td>95</td>
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<td>31%</td>
<td>31%</td>
<td>39%</td>
<td>33%</td>
<td>28%</td>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>Sunday February 17th 2013</td>
<td>256</td>
<td>228</td>
<td>167</td>
<td>144</td>
<td>150</td>
<td>125</td>
<td>80</td>
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<td></td>
<td>46%</td>
<td>41%</td>
<td>30%</td>
<td>26%</td>
<td>27%</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td>Friday February 15th 2013</td>
<td>187</td>
<td>124</td>
<td>196</td>
<td>171</td>
<td>156</td>
<td>142</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>33%</td>
<td>22%</td>
<td>35%</td>
<td>30%</td>
<td>28%</td>
<td>25%</td>
<td>13%</td>
</tr>
</tbody>
</table>
There is no chance of creating any great places beyond downtowns without relaxing parking requirements - Fred Kent
Balancing the Needs of the City

The purpose of this section is to explore the policy options to reduce the oversupply of parking and decrease the amount of land consumed by parking found in the Data Analysis section. Parking policies should seek to maximize the benefits of parking and minimize the negative side effects, while ensuring the costs and benefits are distributed equally (IBI, 2005). Many policy analysts acknowledge parking reform as an incremental and gradual process (Kaplan, 2009). It is a common trend for cities that have initiated change to parking policies to be pragmatic in their approach to policy reform. For instance, Seattle, WA applied reductions to MPRs in specific areas to evaluate the success or failure of policies before making citywide transformations.

It is suggested that parking polices fit with the goals and vision of the community in order to gain acceptance (CMAP, 2012). Citizens are consulted with on a variety planning issues, therefore when citizens are consulted on parking policy change then new parking policies have greater potential to align with the existing policies and greater potential for acceptance occurs. For example, the residents voted Zurich, Switzerland's parking maximum in in 2010. 55 per cent were in favor of replacing parking minimums with maximums (Irwin, 2012). Childs (1999) believes “the city as a whole has an interest in the character of the city, the economic viability of its buildings, the congestion of its streets, the viability and quality of pedestrian, bicycle, and bus systems, and air and land pollution caused by automobiles.” Successful parking reform is synonymous with citizen buy-in and acceptance of change. With regards to this report the policy options and recommendations contained herein required citizen consultation prior to implementation.

Willson (1995) believes reformed parking requirements could be a powerful factor in supporting a community's
goals, whether they concern environmental quality, urban design, transportation systems or economic development. Accordingly, the following section will provide an overview of the City of Barrie’s current policy framework in order to inform the discussion of parking policy reform options and their alignment with existing community goals.

Current Policy Framework Barrie
The City of Barrie’s last transportation study occurred in 1999 and significant policy shifts have occurred since then. In a recent report by the City of Barrie it was communicated that the City is looking to favour denser, more mixed-use development than what has been built over the last several decades. In addition, the City is in the midst of developing an Active Transportation Plan to encourage and foster alternative modes of transportation. The 2011 City of Barrie Official Plan outlines:

• Emphasis on developing active transportation systems that facilitate movement throughout the City and reduce dependence on the automobile, thus enhancing health and air quality.

• Limit the need for travelling extensive distances for minor purchases and local service facilities.

• Lands designated General Commercial should be easily accessible to the traveling public and connected to points within the City and beyond through a variety of modes of transportation including public transit, and active transportation infrastructure.

• Provide a transportation system that supports the maximum economic development of the City with minimum social, health and environmental impacts.

• To promote healthy communities, active living and energy efficiency; public transit, car-pooling, all forms of active transportation, safe integration and connectivity between these various modes of transportation will be encouraged.

The Intensification Study (2009) outlines some important ideas that can translate into parking standard reform:

• Intensification is typically characterized by mixed land uses in a more compact urban form thereby reducing the need for people to travel long distances between home, work, shipping and recreation.
• New intensification projects will be subject to a high standard of urban design guidelines including matters which include... parking and architectural features

The recent Intensification Area Urban Design Guidelines draft (2012) highlight some important policy recommendations:

• The importance of on-street parking to animate the street, reduce vehicle speeds, and act as a buffer between traffic and pedestrians (Site #1 450 Bayfield Street is located along one of these intensification corridors).

• Improved transit amenities and convenient bicycle parking along intensification corridors to increase active transportation usage.

• Much of the urban form within the Intensification Area is defined by large surface parking lots... the enhanced design of surface parking is important to minimize their impacts on the public realm.

• The overall number of parking spaces should be minimized by sharing the parking between adjacent properties

• Preferential parking for bicycles, energy efficient vehicles and car-share services

It can be concluded from these policy documents that the City of Barrie values the use of alternative forms of transportation, as well as the intensification of districts to be pedestrian scaled. As well, it can be concluded that there has been discussion about parking reform in the City on many occasions. With this in mind possible parking policy reform can be examined.

Policy Options
The following section will outline possible policy options highlighted in Table 5.1 for the City of Barrie to consider that can replace and/or be supplementary to the basic parking standards that currently exist.

Reducing Required Parking Spaces in MPRs
Generic MPRs and their associated parking standards have simply not kept up with the complexity of modern mixed-use development and redevelopment.
Table 5.1: Parking Policy Alternatives

<table>
<thead>
<tr>
<th>Parking Policy Alternatives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Parking Standards for MPRs</td>
<td>Determine actual demand for parking and adjust requirements</td>
</tr>
<tr>
<td>Maximum Parking Requirements</td>
<td>Limit the number of spaces for a site</td>
</tr>
<tr>
<td>Shared Parking</td>
<td>Multiple land-uses have differing peak demand for parking share the spaces to reduce the amount of parking required</td>
</tr>
<tr>
<td>Site-Specific Parking Allowances</td>
<td>Deviations from the parking requirements that are approved on a case-by-case basis</td>
</tr>
<tr>
<td>Cash-In-Lieu</td>
<td>Developer pays the City to not build parking spaces</td>
</tr>
<tr>
<td>Parking Design Guidelines</td>
<td>Improve the urban design of the site and reduce environmental impact</td>
</tr>
<tr>
<td>Market Driven</td>
<td>No parking requirements and market decides how much parking to provide</td>
</tr>
</tbody>
</table>

MPRs have the potential to be altered to allow planners to better measure the actual demand for parking, and to balance parking with wider community goals (EPA, 2012). Accordingly, maintaining MPRs with reductions to parking standards is option to be explored (i.e. less parking spaces per square foot). If the City of Barrie is to keep MPRs, parking demand research (parking occupancy studies) should be conducted to prevent further over-supply of parking spaces within commercial properties; revising parking standards to reflect the actual demand.

The needs of customers at different retail locations are important to identify. As it was observed in Chapter 4 more people were using the drive thru than parking at the banks and restaurants with drive thru options, thus reducing the demand for parking.

Furthermore, Litman (2012) notes that demand for parking tends to decline for areas where people are under 30 and over 65 years of age. At present, researchers challenging excessive parking requirements note that the baby boomer population like to walk and younger people are not as interested in cars (MTC, 2012). Exploring demographics alone can reduce the expected demand for parking in the future.

A sensible approach provided by Litman (2000) for parking standards and MPRs is to start with industry standards that assume 100 per cent automobile use, and adjust on the
basis of the characteristics of the demographics and socio-economic statuses of the city. Looking at other comparable cities is also an option for a starting point, but research should be conducted to understand the actual demand in the City of Barrie. The model should then be tested for reasonableness by means of occupancy studies at existing land uses (ULI, 2010). The standard belief is that the bigger the building the bigger the parking requirement. While this may be true in some cases, in others it is not, which is why parking occupancy studies should be completed to inform parking standards for MPRs.

Minimum Parking Requirement Case Study Examples
Helena, MT has a population of 28 592 and a surrounding regional population of 63 395 (US Census Bureau, 2011). Helena provides an example of keeping MPRs in conjunction with allowing reductions to MPRs in specific instances (See Appendix G Helena, MT Parking Policy). The City of Madison, WI recently reduced the MPRs in their zoning code for commercial buildings as part of an environmental sustainability initiative (See Appendix H: Madison, WI Parking Policy). The code greatly reduces MPRs as well as introduces minimum bicycle parking requirements as well as encourages shared parking (to be discussed below). The changes are to support the re-use of existing commercial spaces, encourage new business, as well as encourage alternative modes of transportation (Mosiman, 2009). Prior to making changes to the parking requirements the citizens of Madison, WI were consulted with. The overall process took about three years as the proposed changes began in 2009.

Portland, Oregon has also made adjustments to their minimum parking requirements to account for the reduction in vehicle use near transit, good street connectivity, and/or pedestrian access require less parking. (See Appendix I: Portland, OR Minimum Parking Requirements).

While looking at parking policy options it is important to remember that MPRs and their respective parking
standards are just one policy option developed many years ago. Today, we have many other policy options that can be utilized in conjunction with MPRs that will be explored in the remainder of the section.

Maximum Parking Requirements
As the relationships between land-use and transportation become increasingly interconnected with the high costs of transportation infrastructure and high land values, maximum parking requirements can work to alleviate such problems by limiting the total number of spaces that can be provided in new developments.

Less parking can be attractive to consumers that value a pedestrian friendly experience with active streetscapes. Furthermore, when combined with reduced minimums, parking maximums allow for a range in parking to be provided (Davidson & Dolnick, 2002). While, it is important to remember key informants noted that maximum parking requirements could push development out to nearby municipalities.

Maximum Parking Requirements Case Studies
The City of Gainesville, Florida with a population of 124,354 (comparable to the City of Barrie) induced maximum parking requirements as a tool for limiting automobile trips and controlling the supply of parking. They chose maximum parking requirements instead of pricing parking to encourage alternative modes of transportation (Millard-Ball, 2002). While not comparable in composition to Barrie, the City of Boston, MA established a cap on the amount of parking spaces a developer could build over 20 years ago. It recently made further reductions to the maximums in order to encourage alternative modes of transportation.

Communities in Cambridge, MA, Portland, OR, and Eugene, OR have all opted to use minimum and maximum parking requirements in conjunction with each other (Millard-Ball, 2002). The success in Portland can be attributed to the
involvement of relevant stakeholders in the process. Prior to the parking policy reform developers, real estate brokers, lenders, and other private sector interests came together to develop maximum parking requirements. The City chose to involve a variety of stakeholders in order to gain buy-in prior to the policy being implemented. Millard-Ball (2002) notes that developers have an interest in understanding the local area and the transportation system as they can benefit from having to build fewer spaces and save money.

Redmond, WA is a suburban community with progressive parking polices that have proven effective (Davidson & Dolnick, 2002). They use a combination of minimum and maximum parking requirements for commercial parking spaces. For the retail and general commercial zones a maximum of 5 spaces per 1000 square feet are allowed and a minimum of 4 spaces per 1000 square feet are required (City of Redmond, 2011). For example, in a 5000 square foot building a minimum of 20 spaces would be required with a maximum of 25 (Davidson & Dolnick, 2002).

The prevention of spillover onto the street was the justification for specifying minimum parking requirements in the first place. Accordingly, it should be noted that when reducing parking standard minimums and introducing maximums must be done in conjunction with looking at possible spillover onto the street (Millard-Ball, 2002).

**Shared Parking**

It is suggested by the Urban Land Institute (2010) that shared parking should be site-specific and blanket adjustments should be avoided as they generally continue to provide an oversupply of parking. Shared parking can often reduce the needed supply of parking by 10-30 per cent by accommodating for occasional peaks in demand as depicted in Figure 5.1 (Litman, 2012). CMAP notes “the pedestrian environment of a site often benefits greatly from shared parking” (2012, p.22) less sprawl occurs and


development is more compact. Developers are often required to conduct shared parking studies prior to them being implemented. The studies look at land-uses and parking demand models for each land-use by the hour of the day, day of the week, and month of the year to determine compatibility.

Shared Parking Case Studies

The City of Redmond, WA is a suburb of Seattle, WA with a population of about 55,228 (U.S. Census Bureau). The City allows for cooperative parking facilities (also known as shared parking) by approval of the Technical Committee and compliance with the conditions set out in the policy (See Appendix J: Redmond, WA Shared Parking Policy).

Since 2011, the City of Mississauga, ON (a suburb of Toronto) has allowed for shared parking in mixed-use development. It provides developers with a guide on how to provide parking occupancy studies, including shared parking through its Planning and Building Department (See Appendix K: City of Mississauga Shared Parking Policy). The former City of Hamilton also provides allowances for shared parking (See Appendix L: Former City of Hamilton Shared Parking Policy).

Figure 5.1: Real Parking Demand and Unshared Parking Supply

Site-Specific Parking Allowances

It has been identified throughout the report that cities have diverging parking demands and therefore require different parking requirements. Sub-markets exist in parking as land-uses have different parking demand.
**Site-Specific Parking Allowance Case Studies**

In Fort Myers, Florida the Staff Action Committee includes staff from community development, redevelopment and planning, public works, parks, fire, and public safety (CMAP, 2012). The Committee comprised of a variety of backgrounds, together, look at site plans to determine if variances and deviations should be approved. City Council serves as the board of appeal for specific deviations under review. Beaverton, Oregon is a suburban city of Portland, OR and regulates parking through targeting the amount of land area devoted to parking, rather than the number of spaces provided (Millard-Ball, 2002). This reduces the amount of land being utilized but also encourages the development of parking structures that can be costly.

The City of Madison, WI also initiated site-specific reductions for parking in addition to the reductions in MPRs they revised in 2013 (See Appendix M: Madison, WI Site Specific Parking Policy).

**Cash In-Lieu**

A cash in-lieu policy currently exists for the C1 district of Barrie (downtown city center) as the City provides a multitude of public parking spaces in the area. It was suggested in the 2011 parking study that the city increase the cash in lieu from $2,500 per space to $15,000.

**Cash In-Lieu Case Studies**

Figure 5.3 is an excerpt from the 2011 City of Barrie parking study showing what other municipalities in Canada are utilizing for their cash in lieu policies.
<table>
<thead>
<tr>
<th>Municipality</th>
<th>Policy</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City of Ottawa</strong></td>
<td></td>
<td><strong>Provide an application for CIL with a $2,387.56 fee</strong></td>
</tr>
<tr>
<td></td>
<td>Use</td>
<td>Inside Central</td>
</tr>
<tr>
<td>Retail</td>
<td></td>
<td>$6,860.00</td>
</tr>
<tr>
<td>Restaurant</td>
<td></td>
<td>$7,570.00</td>
</tr>
<tr>
<td>Medical Dental</td>
<td></td>
<td>$8,280.00</td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td>$8,655.00</td>
</tr>
<tr>
<td>Office</td>
<td></td>
<td>$8,990.00</td>
</tr>
<tr>
<td>Personal Service</td>
<td></td>
<td>$9,700.00</td>
</tr>
<tr>
<td><strong>Mississauga</strong></td>
<td></td>
<td><strong>Initial rate of CIL is set to $14,500 per stall which is the estimated cost of providing surface parking in the City Centre today. In the future based on a 50% discount to the estimated actual development cost per stall for a multi storey above grade parking garage.</strong></td>
</tr>
<tr>
<td><strong>Oakville</strong></td>
<td><strong>50% of estimated cost of providing a new parking space. Report mentions above ground garages is approx $30,000-$50,000 so using a $30,000 per stall cost the CIL is $15,000</strong></td>
<td><strong>Recommended by BA GROUP November 2009 Parking management policies North Oakville.</strong></td>
</tr>
<tr>
<td><strong>Town of Richmond Hill</strong></td>
<td><strong>Utilize a formula for surface parking or for multi-level parking and collect 50% of cost of land + construction costs</strong></td>
<td><strong>Irans June 2010 Parking Strategy for Downtown Local Centre. When parking demand exceeds 85% of capacity, funds collected be directed to the provision of additional parking infrastructure.</strong></td>
</tr>
<tr>
<td><strong>Town of Canmore</strong></td>
<td><strong>$40,000 per stall based on 80% of $50,000 per stall cost of construction as determined by the Town of Canmore. The town provides the land.</strong></td>
<td><strong>Construction of the parking facility may occur once 50% of the value of the facility has been collected.</strong></td>
</tr>
<tr>
<td><strong>City of Calgary</strong></td>
<td><strong>50% of the estimated cost to construct a prototypical parkade containing 486 stalls in an enclosed above ground structure</strong></td>
<td><strong>The cost of such a stall shall be estimated by an independent engineering firm familiar with parkade design and construction retained by the City.</strong></td>
</tr>
<tr>
<td><strong>Town of Milton</strong></td>
<td><strong>$7,365</strong></td>
<td><strong>Cash in lieu increased 3% from 2010 ($7,143)</strong></td>
</tr>
</tbody>
</table>

**Figure 5.2:** Cash In-Lieu Examples from Cities Across Canada
While the initial function of MPRs were to ensure an adequate supply of parking to prevent spillover, quickly it transformed into providing as much parking as possible. Suburbs, in specific, now suffer from traffic congestion, air pollution, and other negative effects of automobile-oriented transportation systems (Willson, 1995). Parking policies have been consistent with the social values of the time (auto-dominance), but we can see through the current policy framework reviewed in Chapter 3 that the intention for the future is to move forward with less focus on automobile oriented travel in the City of Barrie.

The City of Barrie is precipitously expanding with the introduction of Park Place, a large commercial center in the south-end, and now has two GO Transit stations (the first opening in 2007 and second in 2012) in addition to a rapidly increasing population. The City recently annexed the Town of Innisfil, further expanding opportunities for new development in the future. With increasing development and population growth it is important that the land-use is managed effectively for a prosperous future. Parking policy reform is one of the building blocks that can help to achieve this.

**Policy Recommendations**

We cannot escape the reality that parking lots are a necessity in our car-dominated culture, and accordingly are here to stay. Throughout this report the need to recognize the influence parking policy has on the built environment of suburban communities has been emphasized, as well as the direct impact it has on the lives of citizens.

It is important to note that parking policy is nested within other policies and as a result can have an impact on their outcomes; what may be a rational in parking policy, like MPRs, can generate adverse policy outcomes in another policy area, like inadequate pedestrian infrastructure.
Therefore, there is a need to look at the policy implications in other policy areas when making reforms to parking policy as they can have further implications on community goals and policies. If we refer back to the current policy framework in Chapter 3, current parking standards and policies for commercial developments do not align with several existing policies and community goals the City of Barrie has in place.

It has also been highlighted that parking policies should reflect the varying economic and demographics of localities. Parking needs vary across the city and therefore local needs should be accounted for in policy reform. It is recommended that the City of Barrie utilize a more flexible zoning by-law for parking to address the needs of different neighbourhoods.

The City of Barrie has effectively invested time and resources in the management of the parking system in the central business district; it is now time to spread these resources to suburban developments. By adopting more flexible parking policies the City of Barrie will better align their parking policies with existing community needs, as well as strive to balance the interests of businesses and residents.

**Table 6.1: Policy Options for the City of Barrie**

<table>
<thead>
<tr>
<th>Policy Option</th>
<th>Current Uses in Barrie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Standards for MPRs</td>
<td>Currently have existing MPRs</td>
</tr>
<tr>
<td>Maximum Parking Requirements</td>
<td>Not in use</td>
</tr>
<tr>
<td>Shared Parking</td>
<td>Not in use</td>
</tr>
<tr>
<td>Site-Specific Parking Allowances</td>
<td>Not in use</td>
</tr>
<tr>
<td>Cash in Lieu</td>
<td>Yes, downtown C1</td>
</tr>
</tbody>
</table>

The following section will outline the short, medium and long-term recommendations for the City of Barrie to move forward with parking policy reform. A three-stage approach is recommended to ensure that policy change is pragmatic. Parking policy alternatives are a relatively innovative approach to parking for planners and therefore require research and citizen engagement in order to be well
received and successful. It should be noted that the technically capability of the City of Barrie is unknown, and the capacity of them to undertake these changes will depend upon their resources.

**Short Term**

5. Educate decision makers, residents, and businesses about the costs of oversupplied parking. This will help to generate the required support for parking policy change.

6. Explore the policy options provided in this report to determine what would work best for the City of Barrie.

7. Re-evaluate the parking standards to reflect parking demand by conducting parking occupancy studies. Make reductions to MPRs where deemed necessary.

8. Align parking policies with the goals and objectives of the City of Barrie Official Plan.

Success in parking policy reform has been realized in cities that have consulted with individuals who are directly affected by parking policies. The responses from decision makers, businesses, and residents will help the City of Barrie to understand the community needs and opinions of parking policies. With this information the City can then decide what policy option is best suited for the City. This bottom up approach is more pragmatic, fosters buy-in from all stakeholders involved, and helps to achieve a more seamless integration of policy change.

This study illustrates the oversupply of parking that exists at commercial sites in Barrie. Current parking demand at commercial sites does not align with the City's parking requirements. Parking occupancy studies will help to inform parking demand for MPRs. Reductions to parking standards informed by parking occupancy studies will help the City of Barrie to understand the current conditions and help plan for future need. While these studies can be expensive and time consuming the cost and effort are justified by the long term saving of having a parking system that is calibrated appropriately.
Incremental policy change starting with reductions to parking requirements for commercial sites can help to create buy-in for more flexible parking policies like shared parking and site-specific parking requirements in the future.

Aligning parking policies with community needs will ensure that the City’s policies are compatible with one another. Doing so also allows for the City to move forward in meeting its goals such as: encouraging alternative forms of transportation and the opportunity to provide infrastructure for pedestrians and cyclists.

**Medium Term**

4. Monitor the impacts of reductions in MPRs on parking usage.
5. Introduce more flexible parking policies to encourage more efficient use of land
6. Research parking design guidelines developed by other cities to determine what would work best for the City of Barrie

Monitoring the changes and evaluating the outcomes of policy change is important to ensure the goals and intentions of the policies are being achieved. Evaluation ensures that the parking system is balanced and is meeting the needs of the users. The pragmatic approach afforded to parking policy allows city administrators to slowly integrate policy changes and fix mistakes as they move along; this minimizes the potential negative effects that come with overhauling a policy all at once.

Shared parking is a practical option that has been proven successful in many cities and therefore a vast amount of literature can be referenced for the development of a shared parking policy. Key informants spoke highly of shared parking and believe it is a rational approach to reducing the oversupply of parking. Commercial uses were observed to have differing peak demands and therefore shared parking is possible for commercial parking demand. If successful, the City could move forward and introduce further flexible policy options such as site-specific parking.
policies as developers will become more familiarized with alternatives to MPRs.

Parking design guidelines are a policy the City of Barrie recently explored in their draft the draft Intensification Area Urban Design Guidelines (2012). Researching the effectiveness of parking lot design guidelines in other cities can help the City of Barrie to decide what aspects could work in Barrie and what could not. Learning from other comparable municipalities can assist in providing best practices for the implementation of the City’s own parking design guidelines.

**Long Term**

4. Continue to monitor MPRs and other policy changes to ensure policy goals are being achieved.
5. Make modifications to policies as the population and demographics of the City evolve.
6. Develop parking design guidelines to improve the pedestrian experience, the urban design of the city, encourage active transportation and discourage automobile centric design

Monitoring parking policy outcomes and making revisions are important to ensure the goals and outcomes are being achieved. Accordingly, it is important for the parking supply to effectively utilize the land and support the needs of the population.

The Simcoe County population is expected to continue growing and the transportation needs will likely change. Ensuring the parking supply reflects the needs of the population will become even more important as land becomes less abundant and more expensive.

To offer a more livable city that considers the needs of all citizens design guidelines for parking lots become an import element to create an aesthetically pleasing streetscape. In doing so, residents will likely want to walk and cycle places, pollution will decrease and the community goals become more attainable.
Potential for Further Research

Much of the debate around parking lots is the waste of space they produce, their auto-centric nature, and the aesthetics of them. Ben Joseph says “we need to redefine what we mean by “parking lot” to include something that not only allows a driver to park his car, but also offers a variety of other public uses, mitigates its effect on the environment and gives greater consideration aesthetics and architectural context” (2012). The research conducted for the report only scrapes the surface of parking research. Further research can be completed to explore the negative impacts the oversupply of parking has on humans and the environment.

Additional research can explore the impacts MPRs have on downtowns and the associated abandoned properties left behind as a result of the parking standard deterrent. The environmental impacts of large surface parking lots; urban heat island effects, storm water run-off and pollution are also important topics to be investigated. Researchers like Ben Joseph have begun to explore the potential for parking lots to be utilized as public spaces during off-peak demand. Using parking lots to a greater potential, like public spaces for markets and other community events can make our cities, towns, and suburbs provide richer and more interesting experiences. There is also possibility to explore existing parking design guidelines and the associated improvements to the built environment for active transportation. Moreover, additional research could also be conducted for infill projects in underutilized parking lots by introducing entertainment, offices, movie theatres in commercial and retail centres.

Conclusions

In conclusion, it is recognized throughout the report that parking is an indispensable part of the transportation system, but, Shoup (1999) reminds us that massive overdoses of it are not. Furthermore, a community’s parking policies and regulations have a great deal of
influence on how that community will evolve over time (Davidson & Dolnick, 2002).

By revisiting the research questions: (1) Do the minimum parking requirements developed by the City of Barrie fail to meet the industry standard for parking lot efficiency of at least 85 per cent occupancy and subsequently create an oversupply of parking? (2) What parking policy alternatives are available to the City of Barrie to balance the under and over-supply of parking in suburban commercial shopping centres?

The analyses presented in Chapter 4 did not suggest any major parking supply concerns for commercial centres even at prospective peak demand during the holiday shopping season. At times when parking supply was reduced as a result of snow storage, demand was still accommodated without spillover. It is expected through the summer months when seasonal garden center sales are present in the parking lot that existing supply will continue to meet demand. The typical usage of the three sites did not exceed the MPRs nor did they meet suggested 85 per cent efficiency rate for parking lots, in fact, they did not exceed 60 per cent occupancy. Furthermore, all sites provided more parking than required by the zoning-by-law and not once did the demand surpass the MPR. Even as the population of Barrie increases the current parking supply will meet future parking demands above and beyond what is needed.

It can be concluded from this study that the City of Barrie does provide an oversupply of parking in commercial centers. The City of Barrie should consider the bigger issues beyond the convenience of being able to park more and subsequently walk less. This study has shown that parking policy reform is necessary in order to make the City's transportation system more equitable and balanced for all residents. By exploring the policy options outlined in this report and considering the recommendations provided, the City of Barrie can create dynamic parking policies that meet
the demands of the growing and changing population. In doing so they will be equipped with the resources to create a city that encourages all forms of transportation and improves livability by providing their residents with more options.
Appendices
Appendix A: Letter of Information

Letter of Information for Interview Participants

Project Title
School of Urban and Regional Planning, Queen’s University
Minimum Parking Requirements in the City of Barrie

This research is being conducted by Carly Marshall, a graduate student at the School of Urban and Regional Planning at Queen’s University in Kingston, Ontario. The supervisor for this Master’s Report is Ajay Argwal (Assistant Professor at the School of Urban and Regional Planning).

What is this study about? The purpose of this research is to determine if minimum parking requirements in the City of Barrie provide an oversupply of underutilized parking spaces.

The study will require a time commitment of about an hour for you to complete a series of questions pertaining to the topic of minimum parking requirements. Your professional opinion and involvement in the project will help to assist the principle investigator (Carly Marshall) on the feasibility of implementing policy alternatives to minimum parking requirements. There are no known physical, psychological, economic, or social risks associated with this study.

Is my participation voluntary? Yes, your participation is voluntary. It would be greatly appreciated if you could answer the questions based on your professional opinion, you should not feel obliged to answer any material that you find objectionable or that makes you feel uncomfortable. You may also withdraw from the research study at any time, during or after you have completed the questions. If you choose to withdraw from the research after completing the questions, please contact the principle investigator, Carly Marshall of your decision, by telephone (905-767-6139) or by e-mail (0cm88@queensu.ca).

What will happen to my responses? Your responses will be kept confidential and access to the responses will only be made available to the principle investigator. Any printed versions of the responses will be kept in a locked and secure cabinet. If you wish for your responses to remain anonymous and have no links to your identity the principle investigator will ensure that your responses remain anonymous in the final research report. If you wish to withdrawal from the study after your responses have been submitted, your responses will be destroyed. The research findings may also be published in professional journals or presented at scientific conferences, and also be made available for non-academic audiences, but any such presentations and publications will not breach

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individual confidentiality agreements. Should you be interested, a copy of the publication will be given to you. All data will be destroyed after the findings have been published, that is, within five years of the completion of the study.

**Will I be compensated for my participation?** You are not being compensated for your participation in this project.

What if I have concerns? In the event you have any concerns, complaints or questions about this research, please feel free to contact Dr. Leela Viswanathan, leela.viswanathan@queensu.ca (613-533-6000 ext 75038) or the Chair of the General Research Ethics Board (613-533-6081) at Queen’s University.
Appendix B: Consent Form

Consent Form for Interview Participants

Project Title
School of Urban and Regional Planning, Queen’s University
Minimum Parking Requirements in the City of Barrie

Name (please print clearly) ________________________________________________

1. I have read the Letter of Information and have had any questions answered to my satisfaction. I understand that I will be participating in research for the project entitled Minimum Parking Requirements in the City of Barrie. I understand that the research is focused on minimum parking requirements and policy alternatives.

2. I understand that this means that I will be asked to answer a series of questions. I understand that the time commitment to answer these questions is approximately an hour in length. I understand that I am allowed to refrain from answering any questions I do not feel comfortable with answering. I understand that if I do not wish for my identity to be published the principle investigator will publish my answers as anonymous. In addition, the information I provide will help to assist the principle investigator (Carly Marshall) to complete a report on the feasibility of implementing policy alternatives to minimum parking requirements.

3. I understand that my participation in this study is voluntary and that I may withdraw at any time. I understand that every effort will be made to maintain the confidentiality of the data now and in the future. I understand that the data may also be published in a professional journal or presented at academic or professional planning conferences, but any such presentation will never breach my confidentiality.

4. I am aware if I have any questions, concerns, or complaints, I may contact Dr. Leela Viswanathan, leela.viswanathan@queensu.ca (613-533-6000 ext 75038) or the Chair of the General Research Ethics Board (613-533-6081) at Queen’s University.

I have read the above statements and freely consent to participate in this research.
Signature: __________________________ Date: __________________________.
Appendix C: Interview Question Sheet

Questions

1. Do you believe current parking policies require developers to oversupply parking?

2. Do minimum parking requirements significantly increase the cost of a project?

3. When determining the number of parking spaces for a development do you generally supply more than the minimum parking required?

4. Are minimum parking requirements outdated?

5. Would you favour the introduction of design guidelines for parking lots? Maximum parking requirements?

6. What do you think would be the ideal parking policy/by-law?
Appendix D: Parking Occupancy Site Observation Sheet

<table>
<thead>
<tr>
<th>Name of Site:</th>
<th>Tenants</th>
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<td>Location:</td>
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<td>GLFA:</td>
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<tr>
<td>Number of Spaces Required:</td>
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<tr>
<td>Number of Spaces Provided:</td>
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<tr>
<td>Transit Stops:</td>
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<th>Site Visit #</th>
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<th>4</th>
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## Appendix E: Research Protocol

<table>
<thead>
<tr>
<th>Task</th>
<th>Actions Required/ Rationale</th>
<th>Time Frame &amp; Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose 3 sites for parking occupancy surveys</td>
<td>Site selection from different locations across Barrie.</td>
<td>Completed October 2012</td>
</tr>
<tr>
<td>Ethics approval for speaking with policy planners and developers</td>
<td>Complete Ethics application</td>
<td>Completed November 2012</td>
</tr>
<tr>
<td>Obtain site plan for each parking survey to determine Gross Leasable Space and number of parking spaces</td>
<td>Contact City of Barrie for documents. Document characteristics of each site via documents obtained and visit to each site (total parking spaces, gross leasable space, current tenants, age of development). Prepare a map of the site for observations including non-automobile means of access.</td>
<td>Documents obtained from the City of Barrie October 2012.</td>
</tr>
<tr>
<td>Analyze 3 site plans for compliance with zoning by-law</td>
<td>Compare required parking as per the zoning by-law (minimum parking requirements) and parking provided by development.</td>
<td>Completed October 2012</td>
</tr>
<tr>
<td>Prepare documents for each site visit and parking occupancy study</td>
<td>Print off ITE parking survey spreadsheet and make any necessary modifications for parking occupancy study. Have site plan and map prepared for site visits.</td>
<td>Completed October 2012</td>
</tr>
<tr>
<td>Determine how the City of Barrie calculates their minimum parking requirements and policies for zoning by-law</td>
<td>Speak with City of Barrie Planning Department policy staff. Consult with city after parking surveys completed</td>
<td>Completed October 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Completed February 2012</td>
</tr>
<tr>
<td>Review literature for ease studies on policy alternatives for minimum parking requirements</td>
<td>Look at policies and parking studies from other cities to provide suggestions to City of Barrie</td>
<td>Ongoing throughout the research process. All documents obtained by January 31st</td>
</tr>
<tr>
<td>Analyze and coordinate findings</td>
<td>Compile findings into tables and graphs and insert into report</td>
<td>Ongoing after each site visit</td>
</tr>
<tr>
<td>Contact planners/ developers to determine ideas and attitudes about parking standards</td>
<td>Contact planners/ developers to see if willing to complete survey</td>
<td>February 1st-9th</td>
</tr>
<tr>
<td>Complete Report</td>
<td>Compile findings from surveys and policy recommendations</td>
<td>February 2013</td>
</tr>
</tbody>
</table>
### Appendix F: City of Barrie Parking Standards

<table>
<thead>
<tr>
<th>Uses</th>
<th>Parking Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abattoir</td>
<td>1 space per 100m² of gross floor area</td>
</tr>
<tr>
<td>Accessory Retail</td>
<td>1 space per 30m² of gross floor area min. 2 spaces.</td>
</tr>
<tr>
<td>Adult Entertainment Parlour</td>
<td>1 space per 2 persons</td>
</tr>
<tr>
<td>Animal Shelter</td>
<td>1 space per 30m² of gross floor area office space</td>
</tr>
<tr>
<td>Arcade or Game Establishment</td>
<td>1 space per 4 persons</td>
</tr>
<tr>
<td>Arena</td>
<td>1 space per 4 persons</td>
</tr>
<tr>
<td>Art Gallery</td>
<td>1 space per 30m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Assembly Hall</td>
<td>1 space per 4 persons</td>
</tr>
<tr>
<td>AutomotiveLeasing Establishment</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Automotive Repair Establishment</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Automotive Sales Establishment</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Automotive Service Station</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Bakery</td>
<td>1 space per 70m² of gross floor area</td>
</tr>
<tr>
<td>Bank</td>
<td>1 space per 30m² of gross floor area</td>
</tr>
<tr>
<td>Bed and Breakfast Establishment</td>
<td>1 space per guest bedroom, plus 1 space for the owners</td>
</tr>
<tr>
<td>Boarding Lodging Rooming House, Small</td>
<td>1 space for every 2 tenants accommodated. Tandem parking will be permitted.</td>
</tr>
<tr>
<td>Boarding Lodging Rooming House, Large</td>
<td>1 space for every 2 tenants accommodated. Tandem parking will not be permitted.</td>
</tr>
<tr>
<td>Building Supply Centre</td>
<td>1 space per 70m² of gross floor area</td>
</tr>
<tr>
<td>Bus Terminal</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
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<tr>
<td>Bus Transfer Station</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
<tr>
<td>Car Wash</td>
<td>1 space per 70m² of gross floor area</td>
</tr>
<tr>
<td>City Hall</td>
<td>1 space per 30m² of gross floor area</td>
</tr>
<tr>
<td>College</td>
<td>1 space per classroom and office plus 1 space per 10 students</td>
</tr>
<tr>
<td>Commercial School</td>
<td>1 space per student (person)</td>
</tr>
<tr>
<td>Commercial uses otherwise not defined</td>
<td>1 space per 50m² of gross floor area min. 2 spaces</td>
</tr>
</tbody>
</table>

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Appendix G: Helena, MT Parking Policy

Parking space reductions under this section may not exceed fifty percent (50%) of the minimum off-street requirement, except as provided in subsection A4 of this section. Required off-street parking spaces may be reduced as follows:

1. On-street parking spaces may satisfy the off-street parking requirements, on a one-for-one basis, for each legal on-street parking space on a public street right-of-way that is immediately adjacent to the property containing the use. Each uninterrupted twenty (20) linear feet in the portion of the public street designated for public parking of vehicles located within imaginary extensions of the property boundaries onto the street is one parking space. If the boundary extensions intersect any continuous twenty foot (20') length used to determine a parking space, that intersected portion is considered one parking space, regardless of size. Recognition of this space does not create a property interest in the on-street parking and does not guarantee permanent availability of that space within public right of way.

2. A twenty percent (20%) reduction in the total number of parking spaces is permitted if a city-approved transit stop is located within three hundred feet (300') of the property, a safe and convenient pedestrian access exists, and a covered transit stop and seating area exists.

3. For every two (2) bicycle spaces on the property above the number required for the minimum bicycle space requirements, one required off-street parking space requirement is satisfied. The maximum reduction allowed under this subsection is twenty percent (20%) of the minimum off-street parking spaces required. This reduction cannot reduce the number of required accessible parking spaces. Bicycle spaces must hold a bike upright, allow for securing the bicycle to an immovable object, be clearly visible, provide shelter from weather elements, and not conflict with pedestrian and vehicle traffic.

4. A reduction of up to three (3) spaces, not to exceed ten percent (10%) of the minimum requirement, is permitted if a city-approved, advanced charging station for electric vehicles is provided.

5. A ten percent (10%) reduction in the number of parking spaces may be permitted if a landscaped area is provided to create public space greater than three hundred (300) square feet. This landscaped public space must be in addition to the landscaping required by this title and must:
   a. Be located within one hundred feet (100') of a main building entrance;
   b. Have places to sit and visit with other people;
   c. Be designed and constructed to accommodate pedestrians;
   d. Have art features; and
   e. Have at least two (2) trees and meet the landscaping standards of section 11-24-6 of this title.
**Appendix H: Madison, WI Minimum Parking Policy**

<table>
<thead>
<tr>
<th>Use</th>
<th>Automobile Minimum</th>
<th>Automobile Maximum</th>
<th>Bicycle Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>General retail</td>
<td>1 per 400 sq. ft. floor area</td>
<td>1 per 200 sq. ft. floor area</td>
<td>1 per 2,000 sq. ft. floor area</td>
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<tr>
<td>Animal boarding facility, kennel</td>
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<tr>
<td>Bank, financial institution</td>
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<tr>
<td>Business sales and services</td>
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<tr>
<td>Laundromat, self-service</td>
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<td>Liquor store</td>
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<tr>
<td>Package delivery service</td>
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<tr>
<td>Payday loan business</td>
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<tr>
<td>Post office</td>
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<tr>
<td>Secondhand goods sales</td>
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<td>Service business; service business with</td>
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<tr>
<td>showroom or workshop</td>
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<tr>
<td>Small appliance repair</td>
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</table>
Appendix I: Portland, OR Minimum Parking Requirements

Minimum Required Parking Spaces:

A. Purpose

The purpose of required parking spaces is to provide enough on-site parking to accommodate the majority of traffic generated by the range of uses which might locate at the site over time. Transit-supportive plazas and bicycle parking may be substituted for some required parking on a site to encourage transit use and bicycling by employees and visitors to the site. The required parking numbers correspond to broad use categories, not specific uses, in response to this long-term emphasis.
1. Cooperative Parking Facilities. Cooperative parking facilities may be provided subject to the approval of the Technical Committee where two or more land uses can be joined or coordinated to achieve efficiency of vehicular and pedestrian circulation, economy of space, and a superior grouping of buildings or uses. When cooperative parking facilities can be provided, the Technical Committee may reduce the on-site parking requirements based on any of the following criteria:

   a. Peak demand occurs at distinctly different times.

   b. The minimum required parking for a multi-tenant facility shall be based upon the minimum amount necessary to satisfy the highest average daily peak demand generated by the uses at a single time period. In no case shall the minimum required parking for a multi-tenant facility be less than 60 percent of the total required for all uses in the facility.

   c. The continuation of the cooperative facility shall be assured by a sufficient legal document, such as a covenant or reciprocal easement agreement, or by participation in a local improvement district or parking cooperative or association.

   d. Shared parking associated with multi-tenant retail and commercial facilities will be considered to be a cooperative parking facility. Lease agreements will satisfy the requirement for a sufficient legal document.
Appendix K: City of Mississauga Shared Parking Policy

Mixed Use Development Shared Parking

A shared parking formula may be used for the calculation of required parking for a mixed use development. A mixed use development means the following:

1. Non-office uses in an office or medical office building or group of buildings on the same lot
2. Office or medical office space in a building or group of buildings on the same lot primarily occupied by retail uses
3. A building or group of buildings on the same lot containing a mix of office or medical office, commercial uses and dwelling units.

Shared parking is to be calculated in compliance with Table 3.1.2.3 - Mixed Use Development Shared Parking Formula. All required parking spaces must be accessible to all users participating in the shared parking arrangement and may not be reserved for specific users.

The initial step in determining required parking for a mixed use development is to calculate the parking requirement for each use in the development as if these uses were free-standing buildings. The parking requirement for each use is then multiplied by the percent of the peak period for each time period (i.e. noon), contained in Table 3.1.2.3 - Mixed Use Development Shared Parking Formula. Each column is totalled for weekday and weekend. The highest figure obtained from all time periods shall become the required parking for the mixed use development.
Appendix L: Former City of Hamilton Shared Parking Policy

The former City of Hamilton (By-Law 83-66) already has some allowances for shared parking as follows:

“Where office space is provided in conjunction with retail commercial uses and the total floor area of such uses exceeds 9300m2, parking for the office use shall be provided and maintained only for that portion of the office floor area that exceeds 20% of the total floor area of the retail commercial uses. 2. mixed use developments - the aggregate of the required parking may be reduced not more than 20% of the residential or commercial requirement, whichever is lesser.”

Appendix M: Madison WI Site Specific Parking Requirements

<table>
<thead>
<tr>
<th>Parking reduction</th>
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<td>A reduction in the minimum number of parking spaces required may be granted through the following procedures:</td>
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<td>1. For non-residential uses, the applicant may reduce the parking requirement by the greater of (5) parking spaces or ten percent (10%) of the required parking.</td>
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<td>2. A further reduction of up to 20 spaces may be approved by the Zoning Administrator.</td>
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<td>3. A reduction of more than 20 spaces but less than 25% of the required parking may be approved by the Director.</td>
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<td>4. A reduction of more than 20 spaces and 25% or more of the required parking requires conditional use approval.</td>
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A parking reduction request must be initiated by the owner, who must submit information to support the argument for reducing the required number of spaces. Factors to be considered include but are not limited to: availability and accessibility of alternative parking, impacts on adjacent residential neighborhoods; existing or potential shared parking agreements; number of residential parking permits issued for the area; proximity to transit routes and/or bicycle paths and provision of bicycle parking; the characteristics of the use, including hours of operation and peak parking demand times; design and maintenance of off-street parking that will be provided; and whether the proposed use is new or an addition to an existing use.
References


