



# Chapter 4

## Transportation Strategies to Support Growth

### TABLE OF CONTENTS

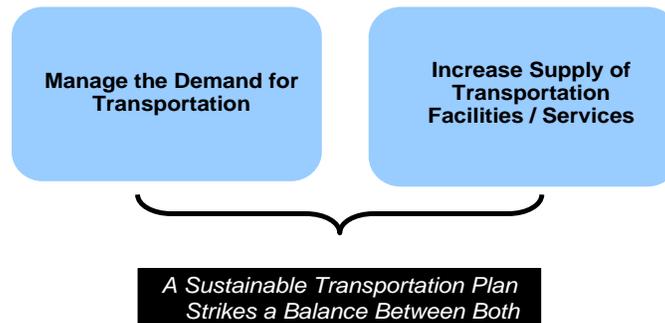
4.1	DESIGNING A TRANSPORTATION STRATEGY .....	1
4.2	STRATEGIES TO INCREASE SUPPLY .....	2
4.2.1	Optimizing the Existing System .....	2
4.2.2	Expansion of Existing System .....	3
4.2.3	Construction of New Transportation Facilities.....	3
4.3	STRATEGIES TO MANAGE TRAVEL DEMAND .....	5
4.3.1	Market Based Strategies .....	5
4.3.2	Behaviour Based Strategies .....	5
4.3.3	Land Use Based Strategies.....	7
4.4	TRANSPORTATION STRATEGY OPTIONS .....	7
4.4.1	Walking and Cycling in 2031 .....	9
4.4.2	Parking Strategies for the Downtown .....	10
4.4.3	Transit Improvements.....	11
4.4.4	Optimization of Existing Transportation System .....	12
4.4.5	Transportation Demand Management Programs .....	13
4.4.6	Truck Routes .....	14
4.4.7	Road Improvements .....	15
4.5	RECOMMENDED TRANSPORTATION STRATEGY .....	16
4.6	EFFECTIVENESS IN REDUCING FUTURE DEMANDS .....	17
4.6.1	Forecasts of Future Travel Demands.....	18

### TABLE OF FIGURES

Figure 4.1 - Relationship Between Supply & Demand.....	1
Figure 4.2 – Planned Road Network Improvements .....	4
Figure 4.3 – 2031 Screenline Deficiencies – With Planned Improvements .....	4
Figure 4.4 – Brantford Transit Annual Ridership.....	6
Figure 4.5 – Existing Multi-Use Trail Network .....	9
Figure 4.6 - Existing Designated Truck Routes.....	14
Figure 4.7 - Future PM Peak Hour Capacity Deficiencies - 2031.....	20

## 4.1 DESIGNING A TRANSPORTATION STRATEGY

In the most simple of terms, there are two basic strategies to address a growing demand for transportation. A municipality can either increase the supply of transportation infrastructure and services, or they can attempt to manage or reduce the demand for transportation in the community.



**Figure 4.1 - Relationship Between Supply & Demand**

An effective and sustainable transportation system attempts to strike a balance between the economic and social benefits of transportation with the need to protect the environment<sup>1</sup>.

The key to the development of a successful and sustainable transportation strategy is finding the right balance between managing demand and providing new transportation capacity that encourages choice between modes of travel, and exploits the synergies that can exist between complimentary strategies. For instance, transit ridership to urban centres can be greatly improved with an effective parking management strategy. Similarly, improvements designed to enhance walking and cycling can also benefit transit ridership.

***Why is balance important?***

- ⇒ *A transportation strategy must be achievable – otherwise the system can be over designed or over capacity*
- ⇒ *The transportation system should improve mobility and accessibility for all residents regardless of car availability*
- ⇒ *An effective transportation system and high quality of life are key factors in business location / retention*
- ⇒ *Alternative transportation modes, such as walking and cycling, offer significant health / quality of life benefits*
- ⇒ *A more balanced transportation system can reduce adverse environmental impacts from road widening / construction, air quality, etc*
- ⇒ *An active and mobile community is a vibrant community*

<sup>1</sup> Strategies for Sustainable Transportation Planning: A Review of Practices and Options, Transport Canada, September 2005

The following sections summarize different approaches and considerations that can be used to design an effective transportation strategy for a community. For a more in-depth discussion on these concepts, and some examples where they have been used, please refer to the Transportation Strategies Draft Report, contained in Appendix F.

## 4.2 STRATEGIES TO INCREASE SUPPLY

There are three main ways to increase the supply of transportation infrastructure and services: Optimize Existing System, Expand Existing Facilities/Services, and Add New Facilities/Services.

Strategies to Increase Supply	
<b>Optimize Existing System</b>	<ul style="list-style-type: none"> <li>•Traffic Signal Coordination</li> <li>•Access Management</li> <li>•Improve Transit Routes / Frequency / Accessibility</li> <li>•Designated Truck Routes</li> <li>•Operational Improvements to Existing Roads</li> </ul>
<b>Expand Existing Facilities</b>	<ul style="list-style-type: none"> <li>•Widen Existing Roads</li> <li>•Add Transit / Cycling Lanes</li> <li>•Add New Transit Routes / Longer Hours of Service</li> <li>•Expand Use of Airport</li> </ul>
<b>New Facilities</b>	<ul style="list-style-type: none"> <li>•Construct New Facilities (Roads/Sidewalks/Trails/ Bicycle Lanes)</li> <li>•Construct New / Enhanced Transit Facilities</li> </ul>

### 4.2.1 Optimizing the Existing System

This approach attempts to maximize the use and capacity of existing transportation assets to allow them to serve more demand and extend their service life. Examples of optimization include;

**Traffic Signal Optimization and Coordination** - Studies have indicated that traffic signal coordination along a busy arterial road can improve capacity and reduce vehicle delays along major corridors by 10-15% during peak periods.

**Transit System Optimization** – Transit System optimization can include improving the transit routes and schedules or reallocating transit related resources to better serve peak demands in high demand corridors or improve on time performance and reliability, a key factor in maintaining current ridership and building new ridership.

**Access Management** - Access management is a technique used in conjunction with land use policies to control the number of entrances that are permitted on key arterial road corridors. A recent study, undertaken as part of the City of London Transportation Master Plan, found that arterial road optimization and access management could increase the capacity of an arterial road by up to 5%.

**Designated Truck Routes** - By designating routes as truck routes, other roadways that are not suited to carry trucks (due to structural conditions, geometric constraints, impacts to residential areas) can operate more efficiently in carrying auto traffic and serving pedestrian and cycling demands.

**Operational Improvements to Existing Roads** - Since the operation of key intersections in the City will often deteriorate sooner than the roadway will reach its functional capacity, the construction of turning lanes at key intersections can increase the capacity of the through lanes by removing turning vehicles from the through lanes.

### 4.2.2 Expansion of Existing System

This approach attempts to increase the capacity of existing transportation assets by increasing existing service or adding capacity. Expanding existing facilities does not just mean widening roads. There are a number of different approaches that can be used to expand existing facilities to accommodate future transportation needs, and system expansion may be a critical component required to support transit or other non-auto transportation strategies.

**Widen Existing Roads** - Widening of existing roads can mean widening the number of through lanes or widening to implement continuous turning lanes, commonly known as Two Way Left Turn Lanes (TWLTL). Widening existing roads can reduce impacts in “greenspace” areas, although in some built up corridors widening can have significant social impacts to neighbourhoods or economic impacts to businesses.

*Studies have shown that the capacity of a four lane arterial road can be increased by up to 15% through the construction of a continuous TWLTL.*

**Add Transit / HOV Lanes** - Adding a dedicated transit lane, known as a Reserved Bus Lane (RBL), or constructing a High Occupancy Vehicle (HOV) lane are two other examples of specialized road widening approaches that support strategies to improve transit use or reduce auto demands.

**Add Cycling Lanes** - The addition of cycling lanes to an existing roadway is an important step in promoting increased multi-modal usage of transportation corridors. On road cycling lanes are obviously more controversial and difficult to implement, due to concerns over conflicts with vehicular traffic, safety, and neighbourhood on-street parking issues.

*The 2000 Multi-Use Trail / Bikeway Master Plan recommended a total network of 162 km of on road and off road trails throughout the City.*

**Add New Transit Routes / Longer Hours / Frequency of Service** - Expanding transit services can include the addition of new transit routes to serve new growth areas, the additional of new routes to serve existing high demand corridors, increasing the frequency of service, increasing the hours or service.

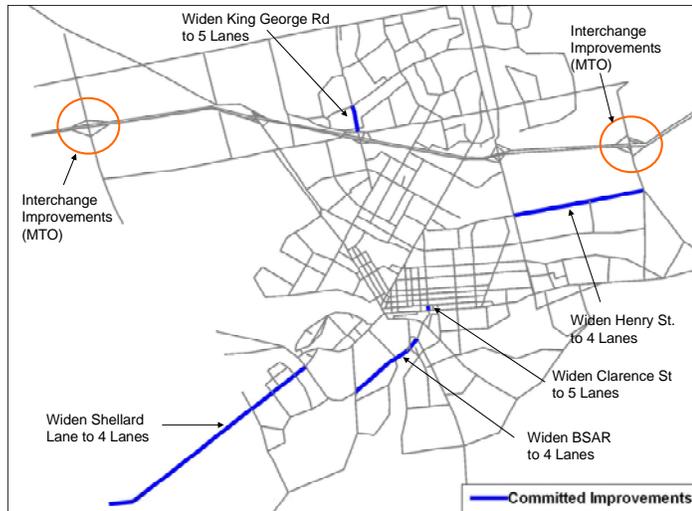
**Expanding Use of the Brantford Municipal Airport** - The current Brantford Municipal Airport largely serves recreational aviation activities with much of its activity focused on the Brantford Flying Club. While there are opportunities to increase the role that the airport plays in serving the City’s Transportation needs, this mode of travel is obviously suited to serving inter-city demands rather than local demands generated as a result of new growth.

### 4.2.3 Construction of New Transportation Facilities

The construction of new transportation facilities can include new roads, new sidewalks and trails, bicycle lanes, and the construction new or enhanced transit facilities. These are the most “aggressive” strategies that not only require extensive capital investment, but may require an extensive planning and implementation process.

**Committed Projects** - The City of Brantford has a list of “Committed Projects” that are based on the current approved 5 year capital project forecast, which include roadway expansion and rehabilitation projects. In addition, the Ministry of Transportation also has some planned improvements on their provincial facilities within the City.

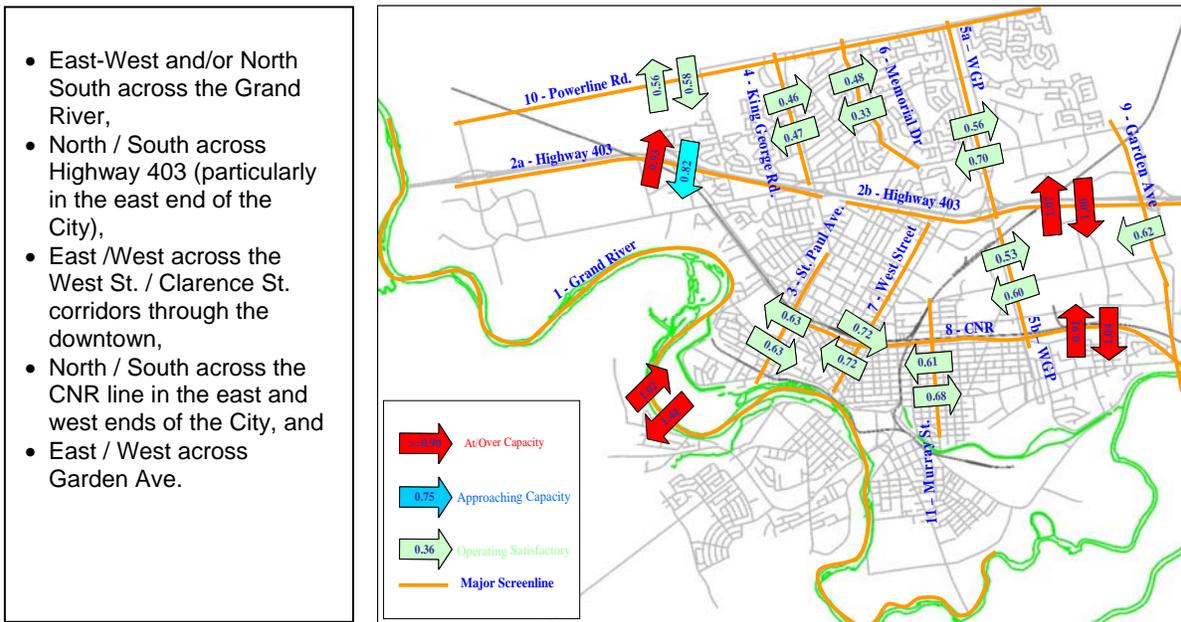
While the priorities for implementation may change each year depending on council and or provincial government priorities, these projects are expected to be built sometime within the 2031 planning horizon, subject to obtaining necessary Environmental Assessment approvals. The following major projects from this listing will influence the capacity of the transportation network.



**Figure 4.2 – Planned Road Network Improvements**

**Longer Term Transportation Corridor Needs** - The implementation of planned and committed projects will address some of the future transportation needs in the community; however, many of the screenlines will still be approaching or over capacity in 2031 with these improvements in place. The figure below illustrates the future volume-to-capacity ratio of the major screenlines with committed improvements in place and no increase in the share of trips made by transit or other modes of travel from today.

**Figure 4.3 – 2031 Screenline Deficiencies – With Planned Improvements**



The 1997 Transportation Master Plan included a number of longer term improvements to address these future deficiencies. Depending on the recommended transportation strategy for the City of Brantford, including an assessment of the effectiveness of non structural measures such as Transportation Demand Management and increased transit use, there may still be a need to implement these or other transportation infrastructure

improvements to address future travel demands. The next phase of the project will undertake an assessment and evaluation of alternative transportation improvements.

### 4.3 STRATEGIES TO MANAGE TRAVEL DEMAND

Over the past 10 to 15 years, the concept of Transportation Demand Management (TDM) has emerged as a strategy to deal with growth in auto traffic. TDM is described as a series of initiatives and policies designed to reduce or control the increase in the overall demand for travel within a community by emphasizing the movement of people and goods, rather than motor vehicles.

There are many different TDM strategies with a variety of transportation impacts, however most strategies fall within one of three general categories:

Each of these strategies uses different types of incentives to encourage people to re-think their travel choices, including the need to travel at all. A listing of some of the most common Demand Management strategies that fall within each of the categories are summarized below.

<b>Market Based</b>	<ul style="list-style-type: none"> <li>•User Pay (tolls)</li> <li>•Parking Supply / Cost</li> </ul>
<b>Behavior Based</b>	<ul style="list-style-type: none"> <li>•Increase Use of Transit Service</li> <li>•Increase Walking / Cycling</li> <li>•Flexible Work Hours</li> <li>•Telecommuting (work from home)</li> <li>•Ridesharing (carpooling)</li> </ul>
<b>Land Use Based</b>	<ul style="list-style-type: none"> <li>•Increase Densities &amp; Encourage Mixed Land Use</li> <li>•Neighbourhood Design to Support Transit / Cycling / Walking</li> <li>•Support Walking / Cycling / Transit at Key Destinations</li> <li>•Enhance Accessibility</li> </ul>

#### 4.3.1 Market Based Strategies

Market based strategies tend to use economic incentives to encourage the desired behaviour. Some market based strategies are relatively simple and can be implemented at a local level, or even at a particular workplace or destination. Market based strategies tend to be the most effective strategies to encourage change, because the incentive is direct and affects the motorists pocketbook. However, they are also the most controversial, for precisely the same reason. Increasing the cost of long term parking or the implementation of roadway or area based tolls are examples of market based strategies.

#### 4.3.2 Behaviour Based Strategies

Behaviour based strategies tend to use a combination of marketing, incentives, and improved infrastructure / services to provide a wider range of transportation choices, and encourage residents to re-consider the transportation choices they make. Behaviour based strategies can also be structured to achieve a number of related objectives such as a reduction in the number of trips taken, the mode of travel used or the time when they travel. Therefore, behaviour based strategies are very flexible, although they are also largely dependent on voluntary change.

*The Public Attitude Survey found that approximately 31% of Brantford residents would be willing to consider changing their current mode of travel to and from work.*

**Marketing Alternative Modes of Transportation** - Encouraging auto users to shift to another mode of transportation may require a number of initiatives and strategies to be implemented as a package. Some of the leading jurisdictions with successful TDM

programs are using social or individualized marketing campaigns to encourage people to make more sustainable transportation choices. These programs recognize that each member of the public will have different motivations and reasons for the transportation choices they make, and the marketing programs need to reflect the benefits that matter most to each segment of the population.

**Encouraging Shifts to Walking and Cycling** - Encouraging a shift to walking and cycling can reduce some auto vehicle trips, support other alternative modes, such as public transit, and can have significant individual, social, environmental and economical benefits to the community. While land use and urban design is recognized as key factor in providing a walkable community, the provision of multi-use trails, sidewalks, and other facilities must also be integrated into community design. Brantford has an active transportation safety committee and has developed traffic calming policies to improve safety and make neighbourhoods more walkable.

*Communities with good walking and cycling facilities typically have residents who drive 5-15% less vehicle miles than in more automobile dependent communities.*

Source: "Win-Win Emission Reductions", Todd Litman, Victoria Transport Policy Institute

People also cite systemic barriers that discourage walking and cycling. The Public Attitude Survey undertaken as part of this study found that encouraging a shift to walking and cycling for work trips may be a challenge in Brantford. Based on the number of respondents that indicated they would consider using an alternate mode, the potential market for a shift to walking and cycling is estimated at 4% of the population.

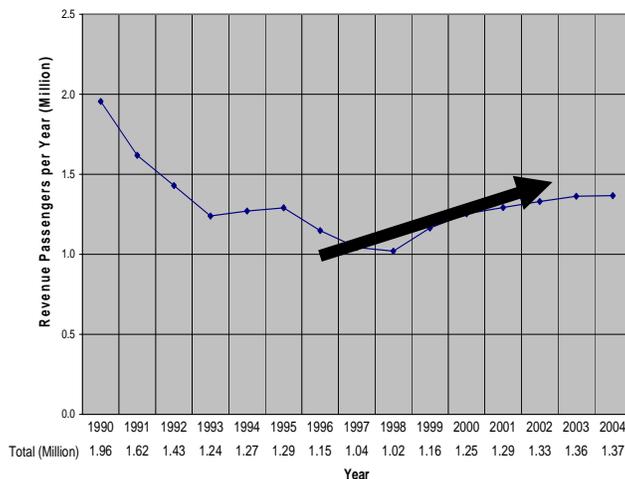
The residents in the City of Brantford, however, do participate in active forms of transportation, and the city has an active Multi-Use Trail committee. Almost 55% of residents in the same survey indicate that they regularly walk for pleasure or to get somewhere in particular.

**Encouraging Shifts to Transit** – Annual ridership on the Brantford Transit System has seen a steady increase since completion of 1997 Transportation Master Plan. Since 1996 there has been a 10% increase in total work trips and a 14% increase in work trips by transit.

The Public Attitude Survey results suggest that 40% of residents, who would consider a change in travel modes to /from work, would consider a shift to transit if they knew the routes and schedules better. Others felt that enhanced service levels or incentive programs would encourage them to try transit.

The City has established a Transit Liaison Committee comprised of transit users

**Figure 4.4 – Brantford Transit Annual Ridership**



and stakeholder organizations (such as Operation Lift, persons with disabilities, Wilfred Laurier University, businesses, etc) to foster discussion on improvements to the current system. Brantford Transit has also been active in looking into the applicability of many strategies to boost transit ridership, including the use of flexible transit passes, student passes, and allowing bicycle racks on transit buses. Where 31% of Brantford residents indicated they would consider changing their mode of travel, approximately 80% of these suggested that financial incentives provided by their employer, the City, or government, would encourage them to use transit to travel to/from work. That represents a potential market of 25% of the population.

**Flexible Hours and Peak Spreading** - The use of flexible work hours can also be key part of transportation demand management program. Flexible work hours could be implemented in a number of ways depending on the type of business, and type of employee. This can range from flexible schedules that do not follow traditional 9-5 office hours to shift change times that avoid peak roadway travel times.

*Staggered shift times have been used for a number of years at the Oshawa GM assembly plant, to avoid conflicting with peak travel times on the road network.*

**Telecommuting** - With the wider availability of high speed internet service, serious interest in telecommuting has risen dramatically over the past few years. The implementation of telecommuting programs is typically initiated at the employer level. Based on forecasts of employment growth in the City of Brantford the potential market could reach 10% of all employees by 2031.

**Ridesharing** - Ridesharing, is an effective transportation strategy for implementation at large employment centres. Almost 9% of all work trips in the City are made by auto passengers. The most common form of ridesharing is between family members, since ridesharing among co-workers is much more difficult to organize and sustain. There are now a number of ride matching services on the internet (such as [www.carpool.ca](http://www.carpool.ca), and [www.carpooltool.com](http://www.carpooltool.com)) that will try to match drivers with similar commuting patterns.

### 4.3.3 Land Use Based Strategies

Phase 1 of the City of Brantford Transportation Master Plan and Official Plan Review adopted a “Compact City” growth scenario as the preferred land use growth strategy to accommodate future population and employment demands. Density, however, is only one aspect of the land use solution. To have a significant affect on transportation behaviour increased densities must be combined with other strategies to improve the mix of land uses within neighbourhoods, promote safe and pleasant walking and cycling environments, provide transit supportive land use design, and reduce the amount of and impact of parking.

## 4.4 TRANSPORTATION STRATEGY OPTIONS

There are many ways to utilize the strategies discussed in Section 4 to create a more sustainable transportation system and improve the liveability of our communities. The key to the development of a successful transportation strategy is finding the right balance between managing demand and providing new transportation capacity, and exploiting the synergies that can exist between complimentary strategies.

Many of these strategies work hand in hand with one another and could have broader and more effective achievements when implemented in conjunction with other improvements. For instance, transit ridership to urban centres can be greatly improved with an effective parking management strategy. Similarly improvements designed to enhance walking and cycling can also benefit transit ridership.

A series of transportation strategy alternatives were developed for the City of Brantford for the key modes of travel in the community. Within each area, different visions of the transportation system were described ranging from a ‘Status Quo’ approach to an ‘aggressive’ approach. The intent of these options was to stimulate discussion amongst the various transportation stakeholders and residents in the community to design a “Made in Brantford” transportation strategy, which reflects community constraints, opportunities, and residents’ visions of what makes a community liveable. Table 4.2 summarizes the transportation strategy options that are discussed in greater detail in the sections below.

**Table 4.2 – Range of Transportation Strategy Alternatives**

<b>Mode of Travel / Policy Area</b>	<b>Alternative 1 – Minimal Change</b>	<b>Alternative 2- Modest Change</b>	<b>Alternative 3 – Aggressive Change</b>
<b>Walking &amp; Cycling</b>	Recreational Focus	Downtown & Recreational	City Wide Focus
<b>Downtown Parking</b>	Manage Demand	Increase Supply	Manage Demand & Increase Supply
<b>Transit Service</b>	Status Quo	Modest Improvement	Transit Focus
<b>Optimizing Capacity of Existing Roads</b>	Status Quo	Focus on Key Corridors	City Wide Implementation
<b>Transportation Demand Management</b>	Passive Approach	Targeted Approach	Aggressive Program
<b>Truck Routing</b>	Status Quo – Permissive Route System	Implement Truck Restrictions	Combination of Permissive Routes & Local Truck Restrictions
<b>Road Network Improvements</b>	Varies Based on Effectiveness of Other Strategies		

Each of the strategy alternatives was also assessed based on series of broad criteria reflecting sustainable transportation objectives, and key elements of the City of Brantford Strategic Plan objectives. This assessment considered the effectiveness of each alternative strategy in terms of:

- Reducing Auto Traffic
- Supporting Transit
- Minimizing Impacts to the Environment
- Improving Travel Choice
- Enhancing the Community
- Minimizing Capital Cost
- Minimizing Operating Cost
- Optimizing Use of Existing Infrastructure

#### 4.4.1 Walking and Cycling in 2031

Currently in the City of Brantford, almost 6% of the work trips are made by walking/cycling and the majority of the current trail system is “off road”. From these figures, it can be concluded cycling serves more as a recreational role in the City rather than an option for traveling to work, which is also an important element in supporting healthy living in the City.

The City of Brantford has an extensive off-road cycling network that is oriented around the recreational areas on both sides of the Grand River. A multi-use trail has also been incorporated into the existing right-of-way along Wayne Gretzky Parkway, which allows for off-road cycling, walking, and rollerblading within this multi-modal transportation corridor.

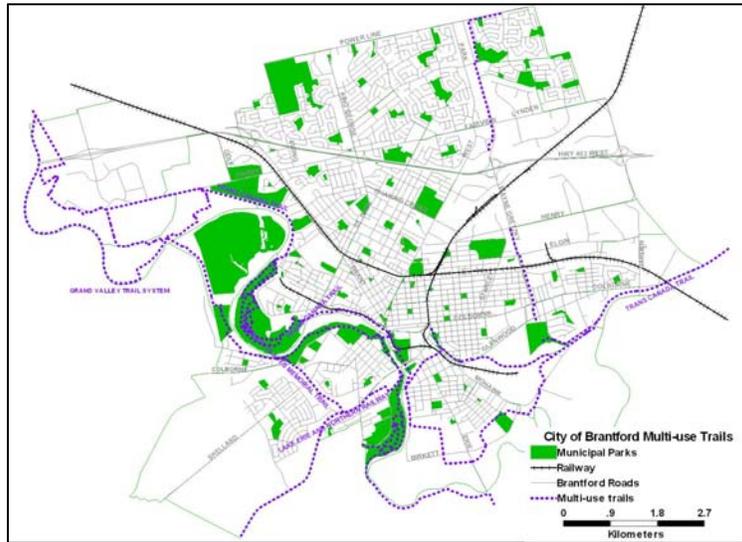


Figure 4.5 – Existing Multi-Use Trail Network

The Highway 403 corridor has been recognized as a major barrier to north-south cycling and pedestrian movements in the City, and therefore the development of a new trail connection in this corridor is common to all alternative strategies.

There are three general policy options available to support walking and cycling in the City.

**Option 1 – Cycling and Walking are important recreational activities that support the health and wellness of the City and existing facilities will be made accessible throughout the downtown and in key areas of the City.** The recommendations of the Multi-Use Trail and Bikeway Master Plan will be modified to focus on pedestrian and cycling connections to/from existing recreational trail facilities.

**Option 2 – Cycling & Walking is a preferred mode of travel within the downtown core and in key neighbourhoods, and is an important recreational activity that supports the health and wellness of the City.** The recommendations of the Multi-Use Trail and Bikeway Master Plan will be modified to focus on pedestrian and cycling connections to/from and within the downtown. Outside of the downtown, the cycling / trail system will focus on recreational cycling routes and sidewalks will be constructed on key transit routes. Within the downtown sidewalks will be maximized to the extent possible and a sidewalk retrofit program will eventually provide sidewalks and fully accessible crossings throughout the downtown.

**Option 3 – Cycling & Walking is a preferred mode of travel for local trips under 5km in length and are important recreational activities that supports the health**

**and wellness of the City.** The recommendations of the Multi-Use Trail and Bikeway Master Plan will form the basis for updated cycling and pedestrian trial network in the City. Sidewalks within new residential, commercial and industrial areas will be introduced as a priority and a sidewalk retrofit program will eventually provide full accessible sidewalks and crossing within key existing residential, commercial and industrial areas.

**Table 4.3 - General Effectiveness of Alternative Walking / Cycling Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	minimal	minimal	minimal	minimal	moderate	minimal	minimal	moderate
2	minor	moderate	minimal	moderate	moderate	minor	minor	moderate
3	moderate	high	minor	high	high	moderate	moderate	moderate

#### 4.4.2 Parking Strategies for the Downtown

Parking management refers to the supply, price and regulation of parking facilities. How parking is managed can significantly affect travel behaviour. When appropriately applied, parking management can significantly reduce the number of parking spaces required, the cost of building new parking facilities, and provide a variety of economic, social and environmental benefits.

The demand for on-street parking has greatly increased in two years, in part due to the increase in enrolment at Laurier University. Off street parking facilities in the downtown core are reaching their practical capacity, and new employment growth in the downtown core will increase the demand. The need for additional parking spaces in the downtown was identified in the 2004 Downtown Parking Study.

There are three general policy options available to downtown parking in the City.

**Option 1 – Improve the supply** of on street and off street parking through the construction of new lots, a new parking garage, or additional on street parking in the core area. Develop policies to encourage development of new private parking facilities.

**Option 2 – Manage the demand** for parking in the downtown to encourage alternative modes of travel through the implementation of higher parking rates for long term (all day) parking and management of the supply of long term parking. Continue to manage short term parking to maximize turnover in commercial districts. Develop policies and incentives to limit the construction of new private parking facilities and encourage higher parking rates within private parking lots.

**Option 3 – Implement a combination of both approaches**, by increasing the supply of long and short term parking to address growth requirements but implementing price increases to encourage more transit use. Develop policies and incentives to restrict the supply of private parking facilities through the use of cash in lieu payments that will be used to fund limited construction of new public parking facilities that are managed with higher long term parking rates.

**Table 4.4 - General Effectiveness of Alternative Parking Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	minimal	none	minor	none	minimal	high	moderate	minimal
2	high	high	minimal	none	moderate	minimal	high	high
2	moderate	moderate	minimal	none	moderate	moderate	high	moderate

### 4.4.3 Transit Improvements

The current transit system serves the 93,000 city residents using a fleet of 28 buses operating on nine fixed routes, during the day. During the evening and on Sundays, they operate 3 fixed routes and two zone bus routes to provide service. All buses operate from the transit terminal on Darling Street. In 2005, the system carried 1.39 million fare paying passengers. This represents a market penetration of 15.2 rides per person. It is estimated that the current transit modal share is 3%.

There has been significant growth (roughly 33%) in ridership over the last eight years, thanks to a series of service improvements and the increased student population in the downtown area. The recent public attitudinal survey suggests that there is willingness by auto users to shift to transit provided there was improved level of transit service, better transit information, or financial incentive to use transit. The city is also poised for significant population and employment growth, with a significant portion of that growth to be accommodated within the downtown core area.

Based on a review of the existing transit system, the following alternative strategies could be implemented in the future.

**Option 1 – Status Quo - Maintain transit services at current levels.** Maintain current rides per capita and mode share (3% of peak period trips). Upgrade existing transit fleet to meet 100% accessibility target and reduce the average age of the transit fleet.

**Ridership by 2031 = +11%**  
**Capital Cost = \$5.5 Million**

**Option 2 – Modest Improvement - Implement service improvements on key performing routes.** Add additional routes or optimize routes to improve mode share to 4% of peak period demands. Upgrade existing fleet to meet 100% accessibility target and reduce the average age of the transit fleet.

**Ridership by 2031 = +42%**  
**Capital Cost = \$12.0 Million**

**Option 3 – Transit Focus - Implement service improvements on key performing routes and add trunk routes along major arterial roadways.** Provide a new downtown transit terminal and implement a satellite terminal at the Lynden Park Mall.

**Ridership by 2031 = +90%**  
**Capital Cost = \$24.4 Million**

Improve overall mode share to 6% of peak period travel demands. Provide enhanced service levels in the downtown core area, and provide a downtown transit shuttle service

to improve accessibility. Upgrade existing fleet to meet 100% accessibility target and reduce the average age of the transit fleet.

**Table 4.5 - General Effectiveness of Alternative Transit Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	minimal	minor	none	minimal	minimal	minor	minor	minimal
2	minor	moderate	minimal	moderate	moderate	moderate	minor	minor
3	moderate	high	minimal	high	moderate	high	moderate	moderate

#### 4.4.4 Optimization of Existing Transportation System

The need for optimization of the existing transportation network is a key requirement for any municipality in times of fiscal restraint. Optimization of the existing transportation system, includes maximizing the capacity of existing facilities, improving the performance and reliability of existing services, and making minor operational improvements to improve system performance.

Based on a review of the existing road network, and opportunities available to enhance existing network capacity, the following alternative strategies could be implemented in the future.

**Option 1 – Status Quo** - Maintain current practices with respect to installation of intersection improvements and traffic signal coordination.

No significant increase to existing capacity.

**Option 2 – Enhance Existing Road Capacity in Key Corridors** – The capacity of key arterial road corridors will be enhanced through an active program of intersection improvements, signal coordination, and arterial road access management policies. Key arterial roads in the City will be given signal priority during peak hours regardless of increased delays to sideroad traffic. Access Management policies will encourage shared entrances for new developments and will encourage consolidation of existing entrances where redevelopment occurs.

Improve the capacity of key arterial roads by an average of 5%.

**Option 3 – City Wide Corridor Optimization** – The capacity of all arterial roads will be enhanced through an aggressive program of intersection improvements, signal system coordination, and arterial road access management policies. All arterial roads in the City will be given signal priority during peak hours regardless of increased delays to side road traffic. Access Management policies will require shared entrances for new developments where possible and will encourage consolidation of existing entrances where redevelopment occurs. On key arterial road corridors, TWLTL lanes will be constructed where physically feasible to improve through capacity.

Improve the capacity of all arterial roads. Capacity of key arterial roads would be improved by an average of 10-12%.

**Table 4.6 - General Effectiveness of Alternative Optimization Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	none	minimal	minor	minimal	minimal	minimal	minimal	minor
2	none	moderate	minor	minimal	moderate	minor	minimal	moderate
3	none	moderate	minor-moderate	minimal	moderate	moderate	minor	high

### 4.4.5 Transportation Demand Management Programs

A TDM Program is an institutional framework for implementing a set of TDM policies or incentives to encourage residents to either reduce the amount they travel, shift their time of travel to avoid peak periods, or change their mode of travel. Brantford does not currently have any formal TDM programs in place, although there have been some discussions about using some selective TDM programs in the Northwest development area.

The results of the Public Attitude Survey of Brantford residents indicates that there may be a market for the promotion of alternative transportation modes, if the right incentives and marketing campaign can be implemented and targeted to these potential users. Based on a review of the opportunities available to promoted TDM in Brantford, the following alternative strategies could be implemented in the future.

**Option 1 – Passive TDM** – The City will support TDM through a series of passive measures designed to encourage awareness of transportation choices and alternatives. This will include the development of marketing materials for distribution to interested parties and employers. Support for TDM will focus on behaviour based policy approaches that encourage additional transit ridership and healthy transportation choices.

*Reduce Peak Hour Auto Demands by 2%. Half shift to transit.*

**Option 2 – Targeted TDM Program** – The City will undertake a targeted TDM program aimed at encouraging the development of a formal TDM program for some of the largest employers in the City. This will include the development of marketing materials for distribution to interested employers. TDM initiatives will focus on a combination of land use and behaviour based policy approaches that try to encourage the use of alternative transportation modes, attract additional transit ridership, and encourage an overall reduction in trip making.

*Reduce Peak Hour Auto Demands by 5%.  
50% shift to transit, 40% use other modes, 10% avoid peak hours.*

**Option 3 – Aggressive TDM Program** – The City will spearhead an aggressive TDM program that will target all major employers and traffic generators in the City. A full time TDM coordinator will be hired to champion TDM measures, develop marketing materials for community groups and employers, and build support throughout the community. The City would invest in TDM measures to provide incentives to encourage trip reductions and would use incentives to encourage all major

*Reduce Peak Hour Auto Demands by 10%.  
50% shift to transit, 40% use other modes, 10% avoid peak hours.*

employers (over 100 employees) to develop formal TDM programs in the workplace. TDM initiatives will use land use, market based, and behaviour based policy approaches to encourage the use of alternative transportation modes, increased transit ridership, increased auto occupancy, and an overall reduction in trip making.

**Table 4.7 - General Effectiveness of Alternative TDM Strategies**

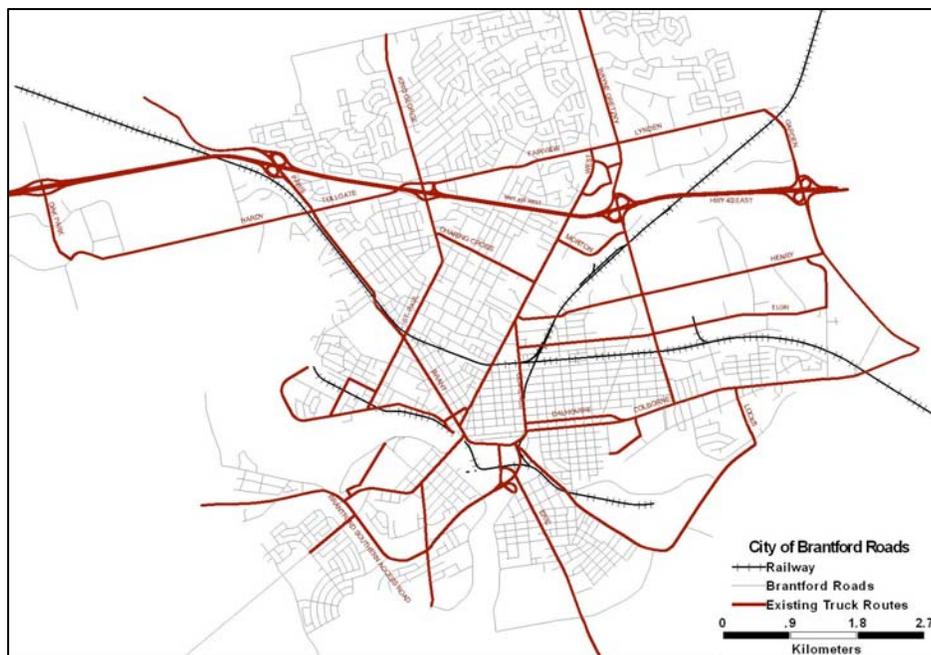
Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	minimal	minimal	minimal benefit	minimal	minimal	minimal	minimal	minor
2	minor	moderate	minor benefit	moderate	minor	minor	minor	moderate
3	moderate	high	Moderate benefit	high	moderate	minor	moderate	high

### 4.4.6 Truck Routes

In the City of Brantford, truck movements are largely directed through the use of a permissive truck routing system. The current truck route by-law designates existing roadways as suitable for truck traffic, and signs are posted that indicate the route is acceptable for truck traffic.

Based on experiences in a wide variety of cities, truck route management falls into two basic types: restrictive and permissive. Based on a review of the opportunities available in Brantford, the following alternative strategies could be implemented in the future.

**Figure 4.6 - Existing Designated Truck Routes**



**Option 1 – Continue Permissive Truck Route System** – The City will continue to use a permissive truck route system and will review designated routes to ensure accessibility to all commercial / industrial areas of the City. The existing by-law will be reviewed with a view to tighten up provisions which allow trucks to use non designated routes.

**Option 2 – Develop a Restrictive Truck Route System** – The City will convert their existing truck route system to a restrictive system that restricts truck movements from certain collector and local roads through truck restriction signage. The by-law will identify roadway where trucks are restricted, with exemptions for local deliveries only.

**Option 3 – Utilize a Hybrid System** – The City will continue to use a permissive truck route system and will review designated routes to ensure accessibility to all commercial / industrial areas of the City. The City will review areas that may require the use of additional truck restriction signing to discourage inappropriate truck movements.

**Table 4.8 - General Effectiveness of Alternative Truck Route Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
1	minimal	minimal	minimal	minimal	minor	minimal	minimal	moderate
2	minimal	minimal	minimal	minimal	moderate	moderate	moderate	moderate
3	minimal	minimal	minimal	minimal	moderate	minor	minor	high

#### 4.4.7 Road Improvements

The selection of a ‘preferred transportation strategy’ will not eliminate the need for road improvements, but it may influence the amount of road improvements or the type of road improvements that will best compliment the strategy. Once a recommended transportation strategy has been developed, the potential for the strategy to reduce or accommodate future travel demands will be undertaken. Where additional capacity is required to address remaining capacity deficiencies an assessment of alternative road improvement alternatives will be undertaken.

**Table 4.9 - General Effectiveness of Road Widening Strategies**

Option	Reduce Auto Traffic	Support Transit	Impact Environment	Improve Travel Choice	Enhance Communities	Capital Cost	Operating Cost	Optimize Existing Infrastructure
Road Widening / New Roads	none	minor	high	minimal	minor	high	high	minor-moderate

## 4.5 RECOMMENDED TRANSPORTATION STRATEGY

Based on input provided amongst the various transportation stakeholders and residents in the community a “Made in Brantford” transportation strategy was developed, which reflects community constraints, opportunities, and the vision of what Brantford residents feel will make their community liveable.

The recommended transportation strategy, summarized in Table 4.10, promotes a balanced approach to transportation that:

- Emphasizes need to promote and invest in alternative modes of travel,
- Establishes the principal of municipal leadership by example,
- Actively promotes alternative transportation modes in the community, and
- Requires an investment in incentives to encourage participation and remove barriers.

**Table 4.10 – Recommended Transportation Strategy**

Mode of Travel / Policy Area	Recommended Approach	
	Short– Medium Term	Long Term
<b>Walking &amp; Cycling</b>	<b>Downtown / Recreational Focus</b> <ul style="list-style-type: none"> <li>• Enhance connections to/from and within the downtown and make downtown sidewalks and crossings fully accessible</li> <li>• Outside downtown, provide sidewalk/trail connections to recreational facilities and on key transit routes.</li> </ul>	<b>Citywide Focus</b> <ul style="list-style-type: none"> <li>• Update and Implement Multi-Use Trail and Bikeway Master Plan</li> <li>• Preferred mode of travel for Local Trips Under 5km in Length</li> </ul>
<b>Downtown Parking</b>	<b>Increase Supply and Manage Demand for All Day Parking</b> <ul style="list-style-type: none"> <li>• Increase the supply of all day and short term parking to address growth needs</li> <li>• Increase price for long term parking to encourage more transit use</li> <li>• Discourage new private parking facilities, invest in municipal parking spaces, and manage demand through pricing</li> </ul>	
<b>Transit Service</b>	<b>Modest Improvement</b> <ul style="list-style-type: none"> <li>• Service improvements on key routes.</li> <li>• Operational improvements to key performing routes</li> <li>• Addition of new routes</li> <li>• improve mode share to 4% of peak hour trips</li> </ul>	<b>Transit Focus</b> <ul style="list-style-type: none"> <li>• Provision of Trunk / Express Routes along major arterials</li> <li>• New north end terminal / downtown terminal</li> <li>• Enhance service / provide downtown shuttle service</li> <li>• Increased overall mode share to 6% of peak hour trips by 2031</li> <li>• Increase annual ridership from 1.39 Million to 1.62 Million by 2016 (+17%), and 2.64 Million by 2031 (+90%)</li> </ul>
<b>Optimizing Capacity of Existing Roads</b>	<b>Implement a City Wide Corridor Management &amp; Optimization Program</b> <ul style="list-style-type: none"> <li>• Initiate an active program of intersection / roadway improvements on key arterial road corridors</li> <li>• Provide signal priority and coordination for arterial roads during peak hours</li> <li>• Control number and location of new commercial entrances</li> </ul>	

Mode of Travel / Policy Area	Recommended Approach	
	Short– Medium Term	Long Term
<b>Transportation Demand Management</b>	<b>Targeted Transportation Demand Management (TDM) Program</b> <ul style="list-style-type: none"> <li>• Develop / support formal TDM programs at large employers.</li> <li>• Focus on Land Use and Behaviour Based Policies to encourage use of alternative modes of travel, attract additional transit ridership, and reduce overall peak hour travel demand</li> <li>• Reduce auto demand by 5% by 2031</li> </ul>	
<b>Truck Routing</b>	<b>Implement a Hybrid Truck Routing System</b> <ul style="list-style-type: none"> <li>• Maintain current ‘Permissive Truck Route’ system</li> <li>• Allow for localized Truck Restrictions, where enforcement has found it difficult to deter truck activity on non designated roads</li> </ul>	
<b>Road Network Improvements</b>	Road network improvements will still be required to serve growth	

## 4.6 EFFECTIVENESS IN REDUCING FUTURE DEMANDS

By adopting the recommended transportation strategy the City of Brantford will be investing in a multi-modal transportation plan. This investment will pay dividends in a number of areas. By promoting alternative forms of transportation, over the longer term, the City will improve transportation choice in the community, promote more liveable communities, and can also reduce road network improvement needs in key areas.

Based on projected travel demands and travel patterns in the community, it is estimated that the recommended transportation strategy will reduce peak hour auto demands by 10% compared to maintaining current mode shares. This will be achieved by:

- Improving the capacity of existing arterial roads by 5% through a program of intersection upgrades and signal timing improvements,
- Increasing the share of trips made by walk/cycle mode from 6% to 10% during the peak hour,
- Increasing the share of trips made by transit from 3% to 6% during the peak hour,
- Implementing downtown parking management policies that will reduce auto driver trips by 2%, and
- Adopting Transportation Demand Management (TDM) measures that will reduce auto demand by 5%.

***Even with currently planned transportation improvements (transit, roads, walk/ cycle), the reduction of auto traffic by 10%, and operational improvements to increase the capacity of existing arterial roads by 5%, the City will face growing traffic congestion by 2031.***

### 4.6.1 Forecasts of Future Travel Demands

The overall influence of the transportation strategies will be realized over time, as supporting infrastructure and policies are implemented. Using the transportation model, discussed previously in Chapter 2, and population and employment forecasts, discussed previously in Chapter 3, forecasts of future traffic volumes for the 2011, 2016 and 2031 horizon years have been developed. Population and employment forecasts for each horizon year can be found in Appendix E.

#### 2011 Horizon Year

For the 2011 planning horizon, the total forecast population and employment for the City is estimated at 100,557 and 45,453 respectively. Based on the previously established trip generation and attraction rates it estimated the total auto travel demand will increase from 36, 500 vehicles per hour, to 44,820 vehicles per hour.

Assuming no change to the existing mode shares, this translates into a total demand of 55,330 person trips within the PM Peak Hour. It is assumed that the transportation benefits associated with shifts to increased transit or walking and cycling, as recommended in the overall transportation strategy for the City, will not be realized in terms of noticeable trip reductions within the initial 5 year horizon period. A breakdown of the 2011 person trips, by mode of travel is provided below.

**Table 4.11 – Future Travel Demands 2011 PM Peak Hour**

Mode	2011 PM Peak Hour Person Trips	% of Trips
Auto Driver	44,821	81%
Auto Passenger	4,980	9%
Transit	1,660	3%
Walk/Cycle	3,320	6%
Other	553	1%
Total	55,334	100%

#### 2016 Horizon Year

For the 2016 planning horizon, the total forecast population and employment for the City is estimated at 108,493 and 50,557 respectively. Based on the previously established trip generation and attraction rates it estimated the total auto travel demand will increase from 36, 500 vehicles per hour, to 49,150 vehicles per hour. Assuming no change to the existing mode shares, this translates into a total demand of 60,680 person trips within the PM Peak Hour.

It is assumed that the transportation benefits associated with shifts to increased transit or walking and cycling, as recommended in the overall transportation strategy for the City, will be partially realized within the initial 10 year horizon period. In forecasting future 2016 travel demands it has been assumed that:

- The share of peak hour trips made by walk/cycle mode will increase from 6% to 8%.
- The share of peak hour trips made by transit will increase from 3% to 4%.
- The implementation of downtown parking management policies will reduce auto driver trips by 2%.

- The implementation of Transportation Demand Management (TDM) measures will reduce auto demand by 3%.

Implementing all transportation strategy options will reduce the total travel demand to 60,540 person trips during PM peak hour. Out of that, 46,619 will be auto driver trips, representing 87% of trips, down from the current 90%. The implementation of the transportation strategies is forecast to reduce auto demands by 5% compared with current mode shares. A detailed breakdown of 2016 PM peak hour trips by mode of travel is provided in Table 4.12, below.

**Table 4.12 - Future Travel Demands 2016 PM Peak Hour**

Mode	2016 PM Peak Hour Person Trips	% of Trips
Auto Driver	46,619	77%
Auto Passenger	5,875	10%
Transit	2,422	4%
Walk/Cycle	4,922	8%
Other	677	1%
Total Peak Hour Trips	60,538	100%
Trips that Shift to Off-Peak Hours	144	

**2031 Horizon Year**

For the 2031 planning horizon, the total forecast population and employment for the City is estimated at 132,068 and 65,949 respectively. Total auto trips for the Compact City land use scenario, which was recommended as part of the assessment of land use alternatives, were 62,604. This represents a growth in peak hour auto demands of 70% over the 25 year horizon, or approximately 2.2% per year. Assuming no change to the existing mode shares, this translates into a total demand of 77,290 person trips within the PM Peak Hour.

It is assumed that the transportation benefits associated with shifts to increased transit or walking and cycling, as recommended in the overall transportation strategy for the City, will be fully realized within the full 25 year horizon period. In forecasting future 2031 travel demands it has been assumed that:

- The share of peak hour trips made by walk/cycle mode will increase from 6% to 10%.
- The share of peak hour trips made by transit will increase from 3% to 6%.
- The implementation of downtown parking management policies will reduce auto driver trips by 2%.
- The implementation of Transportation Demand Management (TDM) measures will reduce auto demand by 5%.

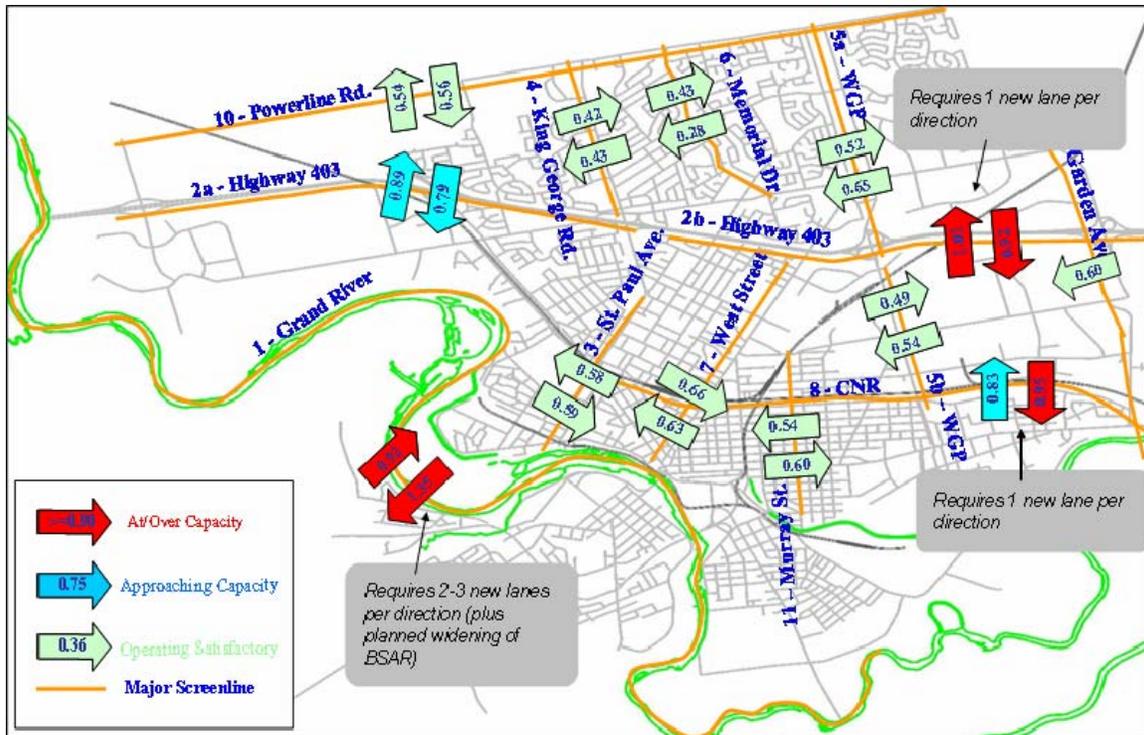
Implementing all transportation strategy options will reduce the total travel demand to 76,990 during PM peak hour. Out of that, 56,500 will be auto driver trips, with a total of 83% of trips using the auto mode, down from the current 90%. The implementation of the transportation strategies is forecast to reduce auto demands by 10% compared with current mode shares. A detailed breakdown of 2031 PM peak hour trips by mode of travel is provided in Table 4.13, below.

**Table 4.13 - Future Travel Demands 2031 PM Peak Hour**

Mode	2031 PM Peak Hour Person Trips	% of Trips
Auto Driver	56,504	73%
Auto Passenger	7,590	10%
Transit	4,619	6%
Walk/Cycle	7,705	10%
Other	572	1%
Total Peak Hour Trips	76,990	100%
Trips that Shift to Off-Peak Hours	299	

Even with the planned improvements from the City's current 5 year capital forecast, additional improvements will be required. Figure 4.7, below, illustrates the key areas in the City where capacity improvements are forecast to be required even with the planned improvement in place. Key areas of the City, such as across the Grand River and crossing Highway 403 will experience significant capacity deficiencies without road network improvements.

**Figure 4.7 - Future PM Peak Hour Capacity Deficiencies - 2031**



Achieving the above noted trip reductions, however, will have some noticeable benefits in terms of deferring capital improvement needs. For example, based on planned growth in the Southwest area of the City, future traffic volume forecasts indicate that 4 new lanes of traffic in each direction would be required in the future if there is no change to current travel behaviour. By achieving the targets outlined above, the City can eliminate the need for one additional lane crossing the Grand River within the 2031 planning horizon.