

June 2010



Sustainable Mobility Plan

for the City of Greater Sudbury

Prepared by: Rainbow Routes Association
For: The Healthy Community Cabinet
for the City of Greater Sudbury

Acknowledgements

SMP Project Management: Rainbow Routes Association

Marisa Talarico
Sustainable Mobility Planning Intern

Debra McIntosh
Executive Director

Melissa McCulloch
Staff

SMP Project Partners



The support of the Government of Ontario is acknowledged



YMCA Sudbury
Greater Sudbury Social Planning
Council

Sudbury & District Health Unit
Sudbury Regional Hospital

Rainbow Routes Association
City of Greater Sudbury

SMP Steering Committee

Bob Jeffery
Chair, Healthy Community Cabinet (HCC)

Janet Gasparini
Executive Director, Social Planning
Council (SPC)

Lynn O'Farrell-Howie
Coordinator, Research & Evaluation, SPC

Cindi Briscoe
Community Development Coordinator,
City of Greater Sudbury (CGS)

Joe Pilon
Vice President, Hôpital Régional de
Sudbury Regional Hospital (HRSRH)

Mark Simeoni
Acting Manager of Community &
Strategic Planning, CGS

Carol Craig
Public Health Nurse, Sudbury & District
Health Unit

John Schmitt
CEO, YMCA Sudbury

Robert Silvestri
Chair, Research/Evaluation s/c, HCC

Dave Kivi
Technician, Traffic & Engineering, CGS

Kris Longston
Senior Planner, CGS

Rob Blackwell
Coordinator of Quality Assurance &
Performance Measurement, Community
Development, CGS

Robert Gauthier
Manager of Transit Operations, Transit, CGS

SMP Working Group

Annette Reszczyński
Senior Social Planner, Social Planning
Council

Monique Beaudoin
Centre de Santé Communautaire

Scott Card
Coordinator, ReThink Green

Barb McDougall-Murdoch
Community Development Coordinator,
CGS

Naomi Grant
Coalition for a Liveable Sudbury

Dr. William Crumplin
Assistant Professor, Laurentian
University

Lilly Noble
Coalition for a Liveable Sudbury

Pete Levan
Vice President, Rainbow Routes
Association

City of Greater Sudbury Staff

Robert Falcioni

Director of Roads and Transportation,
CGS

Catherine Matheson

General Manager of Community
Development, CGS

Chris Gore

Manager of Volunteerism and
Community Development, CGS

David Grieve

Cartographer/GIS Technician, CGS

David Shelsted

Roads Engineer, CGS

Sergeant Gary Lavoie

Greater Sudbury Police Services

Greg Clausen

General Manager of Infrastructure
Services, CGS

Jason Ferrigan

Senior Planner, CGS

Kate Barber

Policy and Community Developer,
Child Care, CGS

Paul Baskcomb

Manager of Community and Strategic
Planning, CGS

Community Organizations

Better Beginnings, Better Futures

Bicycle Advisory Panel

Coalition for a Liveable Sudbury

CGS Social Planning Council

Corner Clinic

Downtown Sudbury

**Downtown Village Development
Corporation**

**Mayor and Council's Roundtable
for Children and Youth**

Our Children, Our Future

**Rainbow Routes Association
Board of Directors**

St. Andrew's Place

YMCA Employment Services

Sudbury & District Health Unit

Contributors from other Cities:

Adam Krupper

Active Transportation Coordinator, EcoSuperior, Thunder Bay

Gary R. Obery

P.E. Traffic Operations Engineer,
Oregon Department of Transportation

Gill Wilson

Coordinator - Pedestrian Facilities, City of Ottawa

Jesse Demb

Bicycle Locker Program, Cycling Infrastructure &
Programs, Transportation Services, City of Toronto

Volunteers

Chris Crawford

Kristina Skeries

Christale Terris

Kristina Donato

Glenn Murray

Editors

Rhonda Lenti

Pete Levan

Ralph McIntosh

Cover Design

Matt Livingstone

Lead Graphic Designer, CGS

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1.0 Executive Summary

In response to a request from the City of Greater Sudbury Healthy Community Cabinet, a partnership was formed between City staff, the Sudbury & District Health Unit, the Greater Sudbury Social Planning Council, YMCA Sudbury, the Sudbury Regional Hospital and Rainbow Routes Association. Through this partnership, funding was secured from the Ontario Ministry of Health Promotion to develop a Sustainable Mobility Plan for Greater Sudbury.

The concept of 'sustainable mobility' refers to the ability of individuals to move freely within their communities, and it generally refers to non-motorized modes of transportation. The Sustainable Mobility Plan (SMP) for the City of Greater Sudbury is anticipated to move the community forward in terms of active transportation strategies and initiatives. With a focus on low income populations the plan will examine the mobility of individuals and the impact mobility has on our health, our environment, and our economy.

The Sustainable Mobility Plan recognizes that developing a sustainable transportation system means building a city where people have the option to walk, cycle, or use public transit as the preferred means of moving from place to place. The Plan for the City of Greater Sudbury hinges on giving equitable consideration to pedestrians, cyclists and transit users when developing policy, planning for new developments and infrastructure, and communicating with the community. The Sustainable Mobility Plan hopes to foster and support the evolution of a community that considers the needs of all citizens when making decisions about land use and mobility. To build a safe, caring and welcoming community, a City must provide affordable access to employment, educational, health, cultural and recreational facilities for everyone including its most vulnerable.

1.1 Why is it Important?

The Sustainable Mobility Plan encompasses all four pillars of the Healthy Community Strategy in Greater Sudbury: economic growth, natural environment, active living, and civic engagement (2010).

Economic Growth: Rising health care costs limit the community's ability to grow economically. The economic burden of inactivity in Greater Sudbury is approximately \$25 million per year. These costs would likely be reduced if individuals had access to safe, well connected active transportation routes throughout the City. Furthermore, providing active and safe travel routes will foster growth in the local tourism industry, as has been demonstrated in both Ottawa and Niagara Falls.

Natural Environment: 25% of all greenhouse gases in Canada are generated by motor vehicles. By providing active transportation infrastructure and support, the City will go a long way towards encouraging greater uptake of more sustainable transportation options by more residents.

Active Living/Healthy Lifestyle: Approximately 63% of the population in the City of Greater Sudbury is overweight or obese compared to the provincial average of 52%. In addition, Greater Sudbury's children are on average, 12 lbs heavier and weaker than they were 30 years ago. Advantages to choosing active transportation include better physical and mental health and improved quality of life.

Civic Engagement/Social Capital: A significant benefit of a sustainable transportation network is that it fosters social interactions among members of the community. As more people walk or cycle, the community will exhibit increased cohesion and individuals may develop a greater sense of personal security. This is particularly important for those individuals with limited transportation choices.

1.2 Where We Stand:

Relatively few Greater Sudburians walk or cycle to work or school despite living in close proximity to their destinations. The City has a very strong car-oriented culture which will require a determined effort on behalf of City Council, City staff and citizens to change.

Between 2004 and 2008 an average of 329 cyclists and 90 pedestrians per year sustained an injury which required a hospital visit. In 2009, four pedestrians and one cyclist died travelling throughout the City.

The City has a forward-thinking Official Plan which has the potential to create a better balance between the needs of pedestrians, cyclists, transit users and motorists. The Official Plan supports active transportation in its overall policies, however, there needs to be a commitment on behalf of City Council to make this vision a reality; specifically, when making decisions, municipal leaders need to give equitable consideration to all users of the transportation system.

1.3 The Challenges:

How do you promote and encourage physical activity in a City and society that is built for automobile use and inactivity?

Land Use and Physical Barriers: Greater Sudbury is a geographically large City with its individual communities and neighbourhoods separated by significant distances and arterial roadways. Residential, commercial and institutional buildings have been segregated from each other, which consequently places destinations further away from where people live. Residents should have the choice of mixing their travel modes in order to reach their destinations.

Limited Resources: Limited financial resources are often cited by municipalities as the primary obstacle to planning, designing, installing and maintaining pedestrian and cyclist infrastructure.

Climate: Greater Sudbury is considered a winter city. With an average annual temperature of only 3.7 degrees Celsius, snow and cold temperatures can impede or discourage active transportation efforts during the winter months.

Attitudes: Greater Sudbury has a very strong “car culture”. The perception that no one walks or cycles has led to a commonly-accepted inference that no one wishes to do so, and this has caused the municipality to focus most of its transportation-related efforts – and funding – toward motorized transportation.

Accessibility: 13% of Greater Sudbury’s population is considered low income. For many members of this community, walking and cycling are their only means of transportation. The lack of sidewalks and cycling infrastructure limits their mobility choices and severely affects these individuals’ personal safety and quality of life.

1.4 What We Did:

In February and March of 2010, over 1250 Greater Sudburians were consulted through public input sessions and focus groups (with low income individuals as well as those with a direct interest in transportation-related issues). The input process focussed on determining what it would take to get more individuals to leave their cars at home and to choose active and sustainable modes of transportation.

Researchers investigated best practices from other cities, both in Canada and abroad. Active transportation leaders in Ottawa, Toronto, Thunder Bay and Portland, Oregon were consulted during the development of this Plan.

City of Greater Sudbury Planners, Engineers, Community Development and Transit personnel were consulted during the development of the Sustainable Mobility Plan. Additionally, staff members from the Greater Sudbury Police Services, Leisure Services and The Mayor and Council’s Roundtable for Children and Youth were consulted.

Both the public and city staff consultations were integrated into the literature review of best practices from elsewhere, ultimately leading to the creation of a Sustainable Mobility Plan which is custom tailored to the City of Greater Sudbury and its own unique mobility challenges.

1.5 Key Opportunity Areas:

1. Policy:

- a. It is essential that the City of Greater Sudbury Official Plan give equitable consideration to walking, cycling, transit and motorized passenger vehicles when developing transportation policy, new infrastructure and new development site plans. The location and physical design of the places people live and work determines their overall travel choices and whether or not they choose to walk or cycle for utilitarian purposes.
- b. Amend the Official Plan to include a bicycle route network and route classification system.

"The City will update the Bicycle Advisory Committee Reference manual and undertake a bicycle network plan."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 133)

2. Infrastructure:

- a. Develop Priority Index Systems to determine priorities for sidewalks, as well as cycling and pedestrian crossing infrastructure.
- b. Invest in, provide incentives for and enter into public-private partnerships to install pedestrian and cycling infrastructure.

3. Awareness and Education

- a. Transform attitudes towards active transportation by making active transportation a vital lens through which all Built Environment decisions are made. It is not enough to just build sidewalks and bike lanes or install bike racks on buses.

1.6 Recommended Next Steps:

- (1) Formally forward this document and its recommendations to the Healthy Community Cabinet and subsequently to City Council for their consideration, as the document was commissioned by the Healthy Community Cabinet.
- (2) Develop a Sustainable Mobility Advisory Panel comprised of representation from appropriate stakeholder groups to provide a holistic approach to sustainable and active transportation initiatives in the City of Greater Sudbury.
- (3) It is recommended to City Council that a staff position be created to assist the Sustainable Mobility Advisory Panel in their functions of advocating and overseeing the advancement of the Sustainable Mobility Plan for the next term of Council and that this matter be brought forward during 2011 budget deliberations.

The Sustainable Mobility Plan for the City of Greater Sudbury provides direction which will enable the City to move towards becoming the most pedestrian friendly city in Ontario by 2015.

The Plan takes into account the fact that one-third of the population of Greater Sudbury does not drive: for example children and youth, seniors, students, as well as those people who cannot afford to own and/or operate a vehicle and those who choose not to use one.

Transportation has been identified as a key issue for low income individuals for numerous reasons: In the case of emergencies, these individuals are limited financially in their transportation choices. Additionally, accessing necessities such as grocery stores, food banks, child care and places of employment is becoming increasingly difficult due to financial constraints for low income individuals.

The Plan contains a series of recommendations designed to improve Greater Sudbury by encouraging walking, cycling and transit use and making active transportation a safe, accessible, pleasant and efficient means of getting around the city.

The Sustainable Mobility Plan is to be used as a tool for the City to move towards developing a multi-modal transportation system where citizens can walk, bike and/or use public transit efficiently and conveniently to get to their destinations.

2.0 Introduction

The Sustainable Mobility Plan (SMP) for the City of Greater Sudbury will assist in moving the community forward in terms of active transportation strategies and initiatives. With a focus on low income populations, the plan will examine the mobility of people and the impact mobility has on our health, our environment, and our economy.

"Sidewalks, bike lanes, bike paths and walking trails need to be fully integrated components of the overall transportation system, providing safe access for pedestrians and cyclists supported by good urban design principles."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 117)

2.1 Defining Sustainable Mobility

Sustainable mobility meets the needs of society to move freely without sacrificing other essential human or ecological requirements today or in the future. The Sustainable Mobility Plan focuses primarily on active transportation. Active transportation refers to any form of human-powered transportation (e.g. walking, cycling, using a wheelchair), and is the only form of transportation that satisfies all attributes of a sustainable transportation system (Metrolinx September 2008).

The Sustainable Mobility Plan recognizes that developing a sustainable transportation system means building a city where people choose to walk, cycle, and use public transit, as the preferred means to move from place to place. A community that is designed to support walking and cycling is both more liveable and attractive. It is a community that promotes healthy living, contributes to a cleaner environment, supports social cohesion of its citizens, and fosters a greater sense of local pride.

In January 2009, *Walk and Bike for Life* (8-80 Cities) - a Canadian based non-profit organization with an international outlook - held a series of workshops with community leaders, stakeholders and residents throughout the City of Greater Sudbury. The resulting report *Trails for Active Transportation* (2009) recommended the development of a Sustainable Mobility Plan for the City of Greater Sudbury. The Healthy Community Cabinet has initiated the development of this plan to coordinate and encourage walking, cycling and other forms of active transportation as a means of getting to places where people live, work, learn and play.

On behalf of the Healthy Community Cabinet, staff from the City of Greater Sudbury formed a partnership with the Sudbury & District Health Unit, the Greater Sudbury Social Planning Council, YMCA Sudbury, the Sudbury Regional Hospital and Rainbow Routes Association to secure funding from the Ontario Ministry of Health Promotion to develop a Sustainable Mobility Plan for Greater Sudbury.

The Sustainable Mobility Plan is the first of its kind for the City of Greater Sudbury, and will assist the city in achieving its objective of becoming the most pedestrian-friendly city in Ontario by 2015 - a resolution passed by City Council in 2007. The Plan is unique in that it integrates literature research with both formal and informal conversations with individuals in Greater Sudbury. Here, best practices from other municipalities in Canada and abroad are applied in a City specific context using the lens of the Healthy Community Cabinet.

The objective of becoming the most pedestrian friendly City will be accomplished by enabling and encouraging more people to choose walking and cycling as means of transportation. The Sustainable Mobility Plan provides policy, infrastructure, and educational recommendations to guide the creation of a safe walking and cycling environment for those for whom these methods are their primary modes of transportation.

Additionally, the transportation needs of young people differ from those of adults, partly because their destinations are different and partly because they travel differently (Gilbert & O'Brien, 2009). On schooldays, for example, the majority of walking and cycling trips are made by young people notwithstanding the recent increase in travel by car. Thus, facilities for non-motorized modes are much more important to the mobility of young people than they are for adults. If the infrastructure can be made safe enough for children and youth to use, it will be sufficient for adults as well.

The intended result of the Sustainable Mobility Plan is a safer, more pleasant and efficient transportation system within the City of Greater Sudbury. As a guide for city planning, design, and implementation of pedestrian and cycling facilities, the Plan will emphasize walking, cycling, and the combination of these modes with public transit as viable alternatives to motor vehicle use.

[2.2 About the City of Greater Sudbury](#)

The City of Greater Sudbury is the largest community in Northern Ontario with a population of approximately 157,857 people (Statistics Canada Greater Sudbury Community Profile Census, 2006). With a relatively low population density of 46.27/km², the City faces challenges in the development of a sustainable transportation system due to the distances that must be traveled. The City of Greater Sudbury is geographically large enough to encompass fifteen southern Ontario cities (Figure 1).

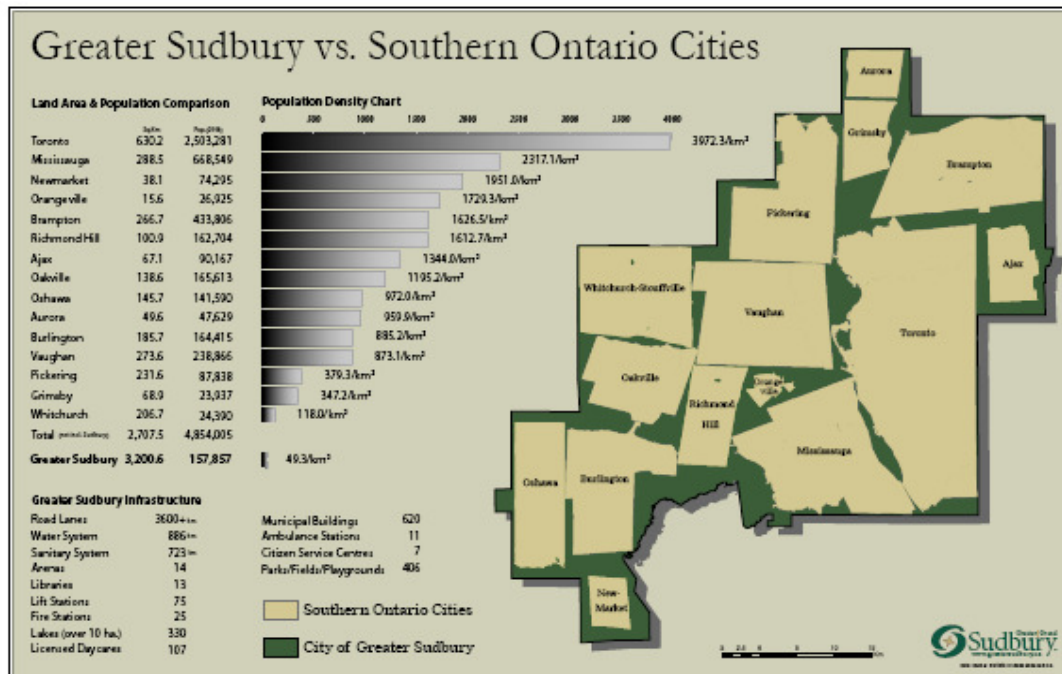


Figure 1. The City of Greater Sudbury is geographically large enough to encompass fifteen municipalities from southern Ontario.

Furthermore, the winter climate poses a significant challenge to the promotion of active transportation in Greater Sudbury. Greater Sudbury is defined by a winter climate with an average annual temperature of only 3.7 degrees Celsius (Environment Canada 2010). Cold weather, snow and decreased light levels in the north all influence both the desire and the ability of people to walk and cycle during the winter months.

According to the 2007-2008 Canadian Community Health Strategy, approximately 63% of residents (aged 18 or older) in the Sudbury District are overweight or obese. In contrast, approximately 52% of the provincial population is overweight or obese. Additionally, the City of Greater Sudbury has an aging population. Approximately 83% of individuals in the City of Greater Sudbury are over the age of 15, and the median age of the population is 41.1 years (Statistics Canada Greater Sudbury Community Profile Census, 2006). For Ontario overall, the median age is 39 years.

2.3 Low Income Considerations

In Greater Sudbury, approximately 13% of the population is considered low income (before taxes), with a median income (before taxes) of \$27,476 (Statistics Canada Greater Sudbury Community Profile Census, 2006). Approximately 11% of low income individuals are males and 14% are female. With a focus on low income populations, the Sustainable Mobility Plan will examine the mobility of people and its impact on health, the environment and the economy.

Access to transportation services directly impacts people's access to necessities including education, employment, health care, social services, recreational activities as well as social interactions (Browne, 2008). The Sustainable Mobility Plan hopes to foster and support the evolution of a community that considers the needs of all citizens when land use and mobility decisions are made. To build a safe, caring and welcoming community, a City must provide affordable access to employment, educational, health, cultural and recreational facilities for its most vulnerable which includes the City's financially marginalized.

Low income predisposes people to material and social deprivation, and is perhaps the most important social determinant of the level of health of an individual. Level of income shapes overall living conditions, affects psychological functioning, and influences health-related behaviours such as quality of diet, extent of physical activity, tobacco use, and excessive alcohol use (Mikkonen & Raphael, 2010). Deprivation also contributes to social exclusion by making it more difficult for individuals to access services and to participate in cultural, educational, and recreational activities.

An effective transportation system is accessible to a wide range of individuals in the community. Furthermore, facilitating the development and improvement of pedestrian and cycling infrastructure will increase the mobility of individuals who cannot afford to own vehicles or have difficulty accessing public transit. Improved mobility options will increase an individual's quality of life and ability to access essential goods and services.

[2.4 Sustainable Mobility and the Healthy Community Strategy](#)

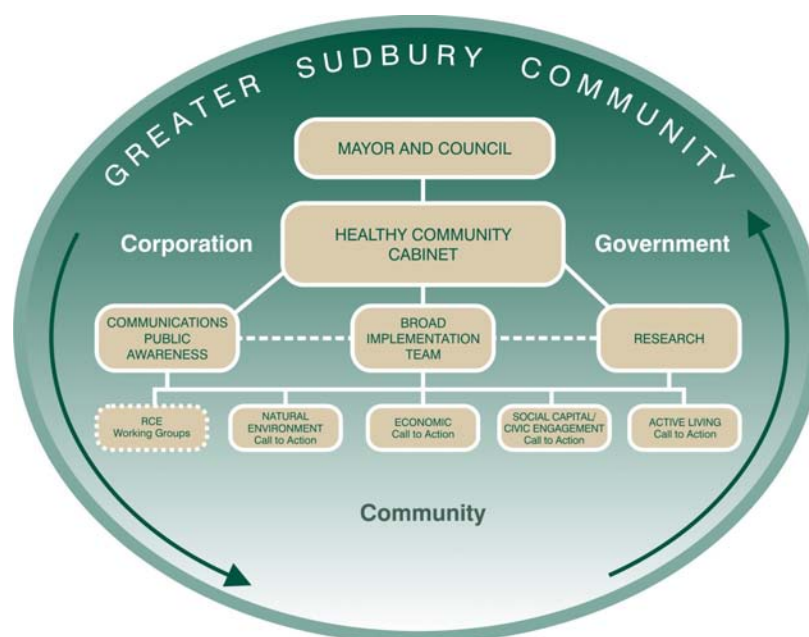


Figure 2. City of Greater Sudbury Healthy Community Cabinet model

The Sustainable Mobility Plan encompasses all four pillars of the Healthy Community Strategy in Greater Sudbury: economic growth, natural environment, active living, and civic engagement (2010).

Economic Growth

In 2009, the Greater Sudbury Development Corporation identified several top economic opportunities for the community over the next three to five years. One opportunity for growth outlines tourism and overall quality of life improvement initiatives with an integrated focus on the natural assets that the City has to offer. Additionally, facilitating 'green' sustainable development is presented as a significant opportunity for economic growth in Greater Sudbury in the years to come (Coming of Age in the 21st Century - Digging Deeper, 2009).

The Greater Sudbury Economic Development Strategic Plan, also points to investing in outdoor recreational amenities such as cycling and walking trails and roller-blading rinks as a strategy to becoming one of the top four tourism destinations in Ontario.

The Sustainable Mobility Plan will facilitate tourism growth by providing opportunities for visitors to experience the City either on foot or by bicycle. Furthermore, the development of active transportation routes within the City of Greater Sudbury will increase the quality of life for residents by providing alternatives to the motor vehicle.

Natural Environment

In 2010, EarthCare Sudbury published a Local Action Plan outlining initiatives and goals in order for Greater Sudbury to become a greener, healthier and more sustainable community. Two of the primary objectives of the EarthCare plan are to improve infrastructure supporting active and non-motorized transportation and to improve awareness about the viability of alternative transportation options in Greater Sudbury.

Under these objectives, EarthCare Sudbury Partners will provide adequate bike parking facilities for their organizations, support the creation of bike lanes as part of road construction projects, and facilitate the connectivity of neighbourhoods through trail development.

Motor vehicles contribute to approximately 25% of all emissions and air pollution in Canada. EarthCare's Local Action Plan aims to reduce greenhouse gas emissions from transportation sources in the City of Greater Sudbury by 1 tonne per capita by 2019. By increasing the number of individuals choosing active transportation, this goal is attainable as pedestrians and cyclists do not contribute to increased air pollution.

Active Living/Healthy Lifestyle

The benefits of living an active life and incorporating either cycling or walking into one's daily routine are numerous. Advantages to choosing active transportation includes improved quality of life, better physical health, and reduced costs associated with motorized transportation.

Active transportation has the potential to also improve the mental health and well-being of a community. For example, as a treatment for depression physical activity programs have been shown to be as effective as pharmacological treatments (drugs) and psychotherapy in reducing depressive symptoms in clinically depressed patients (Farmer *et al* 1988). This was found to be true even for some patients with major clinical depression.

The City of Greater Sudbury routinely reports higher rates of chronic disease. Physically active lifestyles can help reduce the risk of a range of diseases including diabetes, heart disease and various forms of cancer.

My Sudbury Walks Task Group's Walking Strategy identifies the important link between supportive built environments for walking and cycling and increased physical activity levels. The creation of safe and secure pathways for all road users will provide increased opportunities for people, who live, learn, work and play in Greater Sudbury to choose to commute actively, thereby improving their overall health and well being.

The Canadian Medical Association Journal has estimated that the annual economic burden of physical inactivity is \$5.3 billion (\$1.6 billion in direct costs and \$3.7 billion in indirect costs) (Transport Canada December, 2006).

The Ontario Chief Medical Officer of Health's 2004 report found that obesity costs the provincial health care system about \$3.4 billion annually, combining both direct and indirect costs.

If Canadians were to become more active, it is estimated that there would be: 26 % fewer deaths from Type 2 diabetes; 20 % fewer deaths from colon cancer; and 22 % fewer deaths from cardiovascular disease (Cost of Physical Inactivity 2005 - CFLRI).

In Canada, over half of the population 12 years of age and over is not physically active, and the majority of Canadian children don't get the levels of physical activity needed for healthy growth and development (The Built Environment, Physical Activity, Heart Disease and Stroke, 2010).

Civic Engagement/Social Capital

A significant benefit of sustainable mobility is that it fosters social interactions among members of the community. As more people walk or cycle, the community will exhibit increased cohesion, and individuals may develop a greater sense of personal security. This pillar also includes issues of poverty within the City, and as the focus of this Plan is on low income individuals, it fits well within the purview of the Civic Engagement/Social Capital pillar of the Healthy Community Strategy.

Active transportation networks often support other positive behaviours such as political engagement and volunteering. The development and implementation of this Plan will also contribute to neighbourhood connectivity and help achieve social inclusion objectives. The Sustainable Mobility Plan will enhance the current work of the Social Planning Council by improving quality of life and well-being for residents in Greater Sudbury.



Figure 3. Vibrant public spaces and active transportation infrastructure builds social capital

2.5 Vision, Mission, Goals, and Objectives

The Vision

We envision our northern city as a park, where sustainable pedestrian and cycling transportation is not only a viable alternative to the motor vehicle, but also a safe and attractive choice.

"Usually, we think of the park as a rectangle of green in an otherwise grey world, but in Sudbury we could imagine a park with a city in it - a park that happens to have 100,000 people living in it. Redesigning Sudbury as a park with a city in it - and doing this as a collective effort - could serve as a prototype of a sustainable northern city. And if we could accomplish this in a northern mining town, imagine the wider implications." (Glimmer: How Design Can Transform Your Life, Your Business and Maybe Even the World by Warren Berger with Bruce Mau, Random House 2009)

The Mission

The mission is to make walking and cycling safe, accessible, efficient and pleasant in the City of Greater Sudbury.

The Goals:

In order to achieve the goals set out in this Plan, the City of Greater Sudbury will have to rethink its approach to the movement of people and goods, and increase its investment in and commitment to the development of sustainable transportation options.

The goals of the Sustainable Mobility Plan are to:

1. Establish the conditions necessary to make walking and cycling safe and secure for Greater Sudburians of all ages, abilities and incomes.
2. Improve accessibility, not only for those whose primary methods of transportation are walking or cycling, but also to encourage the public to choose walking and cycling as a means of getting to some or all of their destinations. When discussing accessibility, the Plan will focus on mobility issues in regards to low income individuals, seniors, children and youth.
3. Ensure that new and existing routes for walking and cycling are time-efficient options, so that people will consider them as viable alternatives to motorized forms of transportation.
4. Improve the aesthetics of walking and cycling routes to make travel experiences more pleasant such that a higher proportion of the population will be motivated to choose active transportation.

3.0 Methodology

In the development of a Sustainable Mobility Plan for the City of Greater Sudbury, the following methodology was used:

1. Literature Review and Summary: Throughout December (2009) and January (2010)
2. Public consultation: Throughout January, February and March (2010), 1250 citizens provided direct input via a number of methods, including:
 - a. Public input sessions at 6 locations within Greater Sudbury:
 - i. Howard Armstrong Centre (Hanmer)
 - ii. Chelmsford Arena (Chelmsford)
 - iii. Fielding Park (Lively)
 - iv. Lo-Ellen Park Secondary School
 - v. LaSalle Secondary School
 - vi. Tom Davies Square
 - b. Intercept surveys (in both French and English):
 - i. Two days riding Greater Sudbury Transit
 - ii. One day YMCA Center for Life
 - iii. Parkside Older Adult Centre
 - iv. Sudbury Regional Hospital
 - v. Local Engineering Firm
 - c. Online surveys (in both French and English)
 - d. Online bicycle route network map comments
 - e. General e-mails (motivated by publicity through radio and print)
 - f. Sustainable Mobility Plan Facebook group
 - g. World issues classes at Marymount Academy & Lo-Ellen Park Secondary School
3. Focus Groups: Conducted with various low-income populations at:
 - a. Corner Clinic
 - b. YMCA Employment Services Centre
 - c. Our Children, Our Future (Minnow Lake Place)
 - d. Our Children, Our Future (Hanmer)
 - e. Better Beginnings, Better Futures Community Dinner
 - f. N'Swakamok Staff
 - g. Centre de Santé Communautaire du Grand Sudbury (Chelmsford)
 - h. St. Andrews Place (Geared to Income Senior's Residence)
 - i. We also attended a "Poverty Game" session at Better Beginnings, Better Futures.

4. Consultation with City of Greater Sudbury Staff
 - a. Community Development
 - b. Planning
 - c. Engineering
 - d. Transit
 - e. Leisure Services
5. Consultation with Community Stakeholders
 - a. Heart Health Coalition
 - b. Bicycle Advisory Panel
 - c. Coalition for a Liveable Sudbury
 - d. Mayor and Council's Round Table on Children & Youth
 - e. Downtown Village Development Corporation
 - f. Downtown Sudbury
 - g. Social Planning Council
 - h. Sudbury Regional Police Services
 - i. SMP Steering Committee
 - j. SMP Working Group



4.0 Walking: We Are All Pedestrians

4.1 Objective: To become the most pedestrian-friendly City in Ontario by 2015

On May 23, 2007, the Greater City of Greater Sudbury City Council unanimously passed the following resolution:

“AND BE IT FURTHER RESOLVED that the City of Greater Sudbury accept the challenge to become the most pedestrian friendly city in Ontario by 2015.”

The ability to walk to destinations is essential to creating a healthy and sustainable community. As the most basic form of mobility, it is a component of almost every journey. Walking is the only form of transportation which meets the essential criteria of the Triple Bottom Line: it is a healthy activity that is essentially cost-free and without detrimental effects on the environment.

Currently, 7% of individuals within the City of Greater Sudbury use either walking or cycling as their main mode of transportation for commuting to work (Statistics Canada Greater Sudbury Community Profile Census, 2006). The current average for Ontario is also 7%. In order to become the most pedestrian friendly City in Ontario, Greater Sudbury must increase the share of walking as transportation in our community.

Walkability describes the extent to which members of the community have the opportunity of walking to everyday destinations including work, shopping, education and recreation (The Way We Move, 2009). It is also a measure of how easy and enjoyable it is to walk in your neighbourhood.

Building a more walkable city will inevitably create a more sustainable city.

Walking is an established method of improving personal health and is consistently ranked very highly as a preferred physical activity for both youth and adults (Toronto Walking Strategy, 2009). According to the City of Greater Sudbury Parks' Open Space and Leisure Master Plan, walking and cycling are in fact among the favoured activities of City residents. In Greater Sudbury, approximately 83% of those individuals who responded to the Sustainable Mobility Plan public input survey had walked to a destination point within the past 12 months, with 46% of individuals doing so more than twice per week. Walking in particular is well suited to the demographic profile of Greater Sudbury (Appendix A - Sustainable Mobility Plan public input survey).

More people out walking may lead to an increased sense of community, neighbourhood safety and personal security. The key elements of a pedestrian-friendly built environment are well documented: density, mixed-use developments; with short block lengths; and continuous sidewalks that are accessible and well maintained; and street oriented buildings. Low rise housing developments also contribute to improved mental health and reduced stress levels (Jacobs *et al.* 2009). Additionally, streetscape features such as landscaping and street furniture further encourage more pedestrian traffic, leading to a greater sense of safety.

Research has also demonstrated that pedestrian-friendly streetscapes are associated with fewer traffic accidents and less crime (PHSA, 2007). As the City of Greater Sudbury moves towards becoming a more walkable community, the number of pedestrian injuries should decline. Between 2004 and 2008 an average of 90 pedestrians per year sustained injuries which required a hospital visit in Greater Sudbury (Ontario Ministry of Health and Long-Term Care, 2009). This figure represents the number of individuals who sought medical attention and does not take into account the number of people who did not visit the hospital for their injuries. In 2009, there were four pedestrian deaths in the City of Greater Sudbury.

Thus, the City of Greater Sudbury must become a place where walking is regarded as a safe, pleasant, accessible, and efficient choice of transportation.

4.2 Challenges

The following challenges have been identified through public input in the form of surveys (online and intercept), low income focus group sessions and community public input sessions.

(i) Many intersections in Greater Sudbury are not pedestrian friendly.

- Many survey respondents stated that they would like to see extended crossing times at intersections
- It was identified that controlled areas where pedestrians can cross safely are few and far between in rural communities (e.g., MR 80 in Val Caron, Hwy 144 in Dowling)
- Focus group participants (including individuals with limited mobility) identified that it is sometimes very difficult to reach the pedestrian push buttons in the winter time due to snow piled up around the traffic signal pole.

(ii) The City of Greater Sudbury lacks sidewalks in many areas, and existing sidewalks are often disconnected and/or poorly maintained.

"I'm new to this City and can't for the life of me understand the lack of sidewalks. If you want people to walk you should give them a place to do it, especially during the winter months when the snow narrows the roads even more."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

- The proportion of individuals in Greater Sudbury who cited better maintenance as an incentive to walk more – approximately 59% of respondents - was significantly greater than the national average (Figure 4). This point was reiterated numerous times throughout the public input process, particularly by those in low income focus groups. Certain cohorts, such as seniors and mothers with small children, cited poor sidewalk maintenance as a major deterrent to walking to their destinations. It is difficult to navigate the sidewalks when an individuals' personal mobility is limited by a walker, cane, wheelchair, scooter or stroller.
- Feedback at public input sessions and focus groups held in outlying communities, including Hanmer, Lively and Chelmsford, identified the lack of sidewalks in these areas as requiring immediate attention. Areas where sidewalks end abruptly were also identified.
- Survey responses and focus group participation brought to light the issue of crossing Municipal Road 80 in Val Caron as a significant barrier to active living in that area, particularly for children and youth and other groups at risk due to high traffic volumes and lack of safe places to cross.

"We live in the valley. There are no sidewalks. It seems a little ridiculous to drive 30 minutes to Bell Park to take a stroll...Mobility is extremely important in our lives. The lack of it deeply affects our quality of life."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

- The practice of sloping sidewalks in front of driveways to allow for easier access for vehicles has been cited as a concern for many pedestrian groups. Individuals with an uneven stride are more likely to fall or stumble as a result of downward sloping sidewalks and an uneven walking platform. Additionally, young children, youth, seniors or those with limited balance or those using a wheelchair, scooter, or walker navigate sloped sidewalks with difficulty.

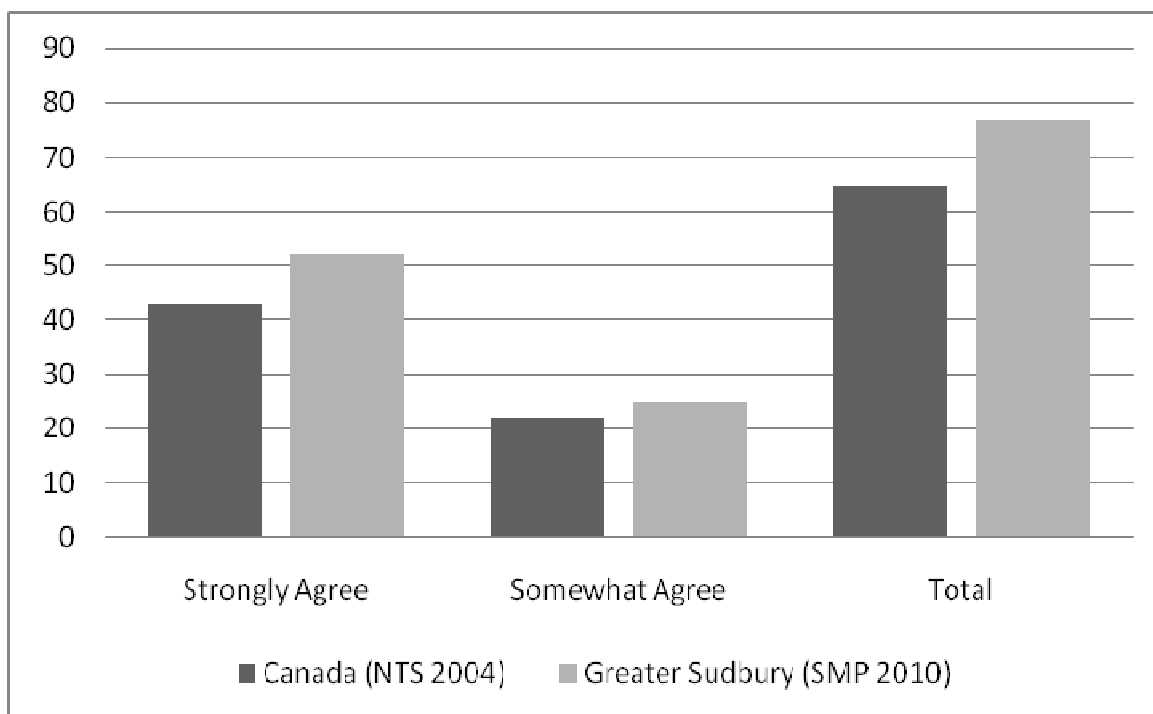


Figure 4. Comparison of improvements which would likely encourage more individuals to walk in the City of Greater Sudbury. Data compared is from the 2004 National transportation Survey (gray) and the February 2010 Sudbury Sustainable Mobility Plan public survey (black).

(iii) Many residents feel unsafe walking in certain areas within the City of Greater Sudbury.

- Inadequate lighting in many public areas has been cited by individuals as a deterrent to walking. This creates apprehension and effectively keeps individuals from taking to the streets.
- The Elgin Street underpass to Riverside Drive is commonly noted as a route which pedestrians (mainly women) are afraid to use. The camera in the tunnel is not enough to relieve these fears.
- Throughout the public consultation process, many individuals living outside the City core identified the Downtown as being either unpleasant or intimidating.
- An increase in police presence in the form of both foot patrols and officers on bicycles would serve to calm many residents' safety concerns Downtown.
- Law enforcement at high traffic pedestrian areas has been identified as lacking, specifically at intersections.
- Many individuals feel their personal safety is at risk when they attempt to cross major roadways or intersections, because motorists are not obeying the traffic laws (i.e. turning right without stopping on red lights, driving with excessive speed and stopping over the crosswalk thereby impeding the path of the pedestrian)

(iv) Drivers, cyclists and pedestrians all require education regarding sharing the roadway and traffic laws.

- Lack of knowledge of how to share the road leads to disrespect and conflict among different users, and unsafe conditions for both cyclists and pedestrians.

(v) Due to a lack of mixed-use development in neighbourhoods, there is limited connectivity between residential areas and the destinations people frequent.

- The Brady St. underpass has been identified as a major obstruction to those individuals walking and cycling from the West End of the city towards destinations in the Downtown or beyond.
- There is limited connectivity between residential areas and destinations such as Downtown or the RioCan Centre in the form of connection trails or paths.

4.3 Low Income Considerations

The majority of the feedback related to the City's low income demographic was collected during focus groups held at various community hubs throughout the City of Greater Sudbury.

- Nearly 75% of all focus group participants have been hit or nearly hit by a vehicle while walking or cycling in Greater Sudbury.
- Many focus group participants identified a lack of mutual respect among different user groups of the road as being a significant concern.
- For low income commuters, walking and cycling were almost always identified as their only modes of transportation.
- Seniors and individuals with restricted mobility who participated in focus groups identified interlocking brick in the Downtown core as a hazard due to the unevenness of the terrain resulting from frost heaving.

4.4 Current Walking Status and Initiatives

On June 28, 2006, the Council of the City of Greater Sudbury passed the following resolution:

"2006-712: THAT City Council endorse the Municipal Pedestrian Charter as prepared by the Sudbury Heart Health Coalition for the City of Greater Sudbury and utilize the Municipal Pedestrian Charter as a guideline in the planning and development of walking opportunities within the City of Greater Sudbury."

- 1) Recent projects such as the installation of pedestrian countdown signals, audible crossing signals and zebra crosswalk markings are improving safety, comfort and convenience for pedestrians of all ages and abilities. It is expected that by the end of 2010, the City of Greater Sudbury will have retrofitted approximately 40% of traffic signalized intersections with pedestrian countdown timers.

- 2) In 2009, a traffic calming pilot project, was conducted on Southview Drive which included the installation of medians, curb extensions and a traffic circle in order to slow down motor vehicles using this road. These types of traffic calming measures have often been successful at slowing down motor vehicles, thereby improving the safety of pedestrians using adjacent infrastructure.
- 3) The City of Greater Sudbury Roads and Transportation department is currently in the process of scoring directional lines into the concrete on the corners at intersections where construction and resurfacing are occurring. These directional lines are intended to facilitate the easy differentiation of the sidewalk from the road where the two surfaces meet for individuals who are seeing impaired.
- 4) The My Sudbury Walks Task Group examines issues such as promoting safe walking and developing Greater Sudbury's physical infrastructure.

For more information regarding local walking events and initiatives visit: www.mysudbury.ca/walks.

4.5 Recommendations

4.5.1 Policy Development

(1) As part of the next Official Plan review process, give equitable consideration to the needs of pedestrians in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for pedestrians and other forms of transportation improvements.

The Transportation Section of the Official Plan should be amended to include a community-wide integrated set of networks and routes that elevate the needs of pedestrians, cyclists and mass transit to a state of balance with automobile use. These amendments would include a network of uninterrupted sidewalks and/or pedestrian trails and walkways developed through retrofitting and new development to ensure that citizens without access to vehicles are able to move through the community (Healthy Community Design Policy Statements for Official Plans, 2010).

(2) Review existing practices to develop a Priority Index System to help set priorities for pedestrian infrastructure improvements, installations, traffic calming and maintenance. Adopt this Index System into the Official Plan through the review process (Appendix B – City of Victoria Sidewalk Priority Index).

The Pedestrian Master Plan for Victoria, B.C includes a *Sidewalk Priority Index* (Appendix B), a database which prioritizes the construction of sidewalks to eliminate gaps in the pedestrian network. The need for new sidewalks is prioritized by a point system, with points awarded for specific characteristics, such as whether it is required on a transit route, if a school is nearby, and if there have been pedestrian-related collisions on the street. A total of 18 characteristics were used in this priority rating system (City of Victoria, BC). The City of Greater Sudbury would benefit from the development of a *Sidewalk Priority Index* in order to provide a timeline for the implementation or completion of sidewalks within the City.

The City of Greater Sudbury's Priority Indexing System could use available Geographical Information Systems (GIS) data, best practices, accident rates, traffic studies and volumes and population densities in order to determine where to set priority for infrastructure maintenance, installation and improvements. Weighting of the index could give priority to low income and senior populations as well as commonly used routes to schools.

(a) Develop a Sidewalk Priority Index to identify gaps in the sidewalk and pathway networks, in order to set priorities for construction, improvements and maintenance.

Many of the rural communities in the City of Greater Sudbury are bisected by large, four-lane, high speed, and high volume thoroughfares. Individuals in these areas have identified this fracturing as a community barrier to both active transportation and healthy lifestyles. Sidewalks along these corridors are often lacking or discontinuous, and traffic signal-controlled pedestrian crossings are often separated by large distances. In order to remain on the sidewalk, individuals often must cross four or five lanes of traffic without the benefit of an intersection, thereby putting themselves in potential danger of being hit by a motor vehicle.

The public has identified the following roads as specifically requiring sidewalks:

- MR 80 in Val Caron and Hanmer (including a lack of safe crossing infrastructure)
- North side of the Kingsway
- St. Agnes Street in Azilda

Priority for maintenance and snow clearing of sidewalks should be given to high traffic pedestrian areas. In particular, the focus should be on areas where there are high densities of seniors, low income earners and school-aged children and youth. Attention should also be paid to ensure accessibility to all users, including those with strollers, walkers, scooters, or wheelchairs.

Poor sidewalk maintenance was identified by citizens as a significant barrier to walking in Greater Sudbury. Proper maintenance and snow clearance is a simple and cost effective way to improve walkability in the City.

"It is the policy of this Plan to provide the following on new and reconstructed roads, when feasible:

- *Sidewalks on both sides of urban arterial roads and collector roads adjacent to developed lands"*

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 133)

(b) Develop a Pedestrian Crossing Priority Index to identify gaps in crosswalk infrastructure and to set priorities for installation, improvements and maintenance.

(c) Using the Priority Index System for pedestrians, determine where traffic calming measures are required on residential and local streets in high pedestrian traffic areas

(3) Follow the Official Plan with respect to development and site plan requirements prior to approvals in all cases (i.e. landscaping, lighting, sidewalks, paving, public art, etc.)

"Development proposals will be reviewed to ensure that there is adequate pedestrian access in new developments. The City may acquire lands to provide pedestrian facilities as a condition of approval. Wherever possible, the provision of adequate bicycle facilities will be encouraged."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 132)

"Barrier-free design of pedestrian facilities will be required through site plans"

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 133)

"Area streetscapes are to be improved over time through appropriate upgrades, such as landscaping, lighting, sidewalks, paving, and public art. These treatments should complement adjacent built form and open spaces, adding to a neighbourhood's character."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 156)

(4) As part of the Official Plan Review process, pedestrian walkways and bicycle trails between neighbourhoods and adjacent commercial, education and employment centers would be identified and secured during the development approval process. Provision for these connections shall be included in the design of the development in order to ensure connectivity for pedestrians and cyclists.

(5) At the request of the local City Councillor or Community Action Network to the Traffic Committee, conduct pedestrian traffic studies to identify where there are significant mid-block crossings are occurring.

(6) Consult with Rainbow Routes Association where pedestrian connections are required to encourage trail linkages to new and existing developments.

Rainbow Routes Association is a not-for-profit organization that promotes and develops non-motorized routes in Greater Sudbury. Working with the municipality, Rainbow Routes Association can assist in identifying areas lacking connectivity to local non-motorized routes and can subsequently develop trails or connections in these areas.

4.5.2 Invest in Pedestrian Infrastructure

(7) Using the Sidewalk Priority Index ensure that identified gaps in the sidewalk and pathway networks are constructed, improved and maintained in all seasons.

(8) Using the Pedestrian Crossing Priority Index ensure that crosswalk infrastructure is installed, improved and maintained where gaps have been identified.

(9) Install pedestrian refuge islands or medians where significant mid-block crossings are identified through Pedestrian Traffic Studies.

"Pedestrians will be provided with separation from traffic and an enhanced sense of safety through such measures as: Providing medians or islands for pedestrians to use when crossing wider streets."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 158)

Pedestrian refuge islands are medians placed in the centre of the roadway separating opposing lanes of traffic and may also be situated at intersections. These islands allow for pedestrians to cross one direction of traffic at a time and are well suited to roads with four or more lanes, particularly those sites where seniors or school-aged children and youth routinely cross the road, mid-block.

A number of jurisdictions in Ontario have implemented pedestrian refuge islands. The City of Toronto warrants the implementation of a pedestrian refuge island when foot traffic in the area of interest exceeds 100 pedestrians in 8 hours, the road is greater in width than 16.4 m and there are 5 lanes of traffic or less (City of Toronto 2007).

In Greater Sudbury, areas which would benefit from the addition of pedestrian refuge islands or the installation of medians include:

- Regent Street, north of the Paris Street intersection between Plaza 69 and Food Basics
- Kingsway Boulevard between Bancroft Drive and the Chapters entrance
- Municipal Road 80 North

(10) Develop a plan for the expansion of the countdown crosswalk signals to be installed at every traffic signalized intersection in Greater Sudbury by 2015.

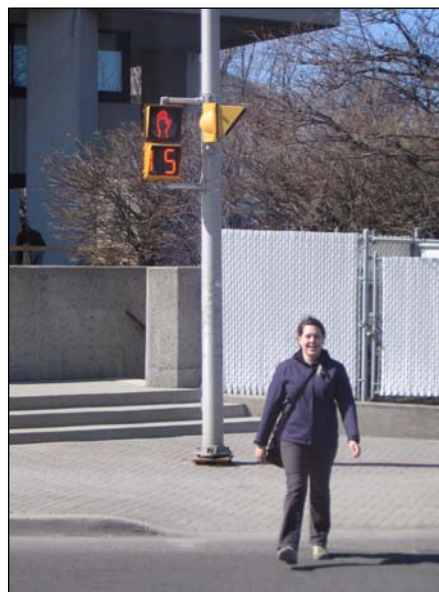
Pedestrian countdown signals provide more precise information to pedestrians of the remaining time available for them to cross the street.

*Markowitz et al. found a statistically **significant injury reduction** (52%) after the implementation of a "countdown" crosswalk system pilot project at 14 intersections in San Francisco (2006).*

The United States Department of Transportation Manual on Uniform Traffic Control Devices for streets and highways (2009 edition) has mandated that all "pedestrian signal heads at crosswalks where the pedestrian change interval is more than 7 seconds shall include a pedestrian change interval countdown display in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval" (Sect. 4E.07).

Closer to home, the installation of pedestrian countdown signals is just one of the initiatives of the Toronto Pedestrian Committee aimed at making the provincial capital more pedestrian friendly. The City of Toronto developed a plan to implement pedestrian countdown signals over a four year period with virtually all signalized intersections projected to be equipped by December 2010 (City of Toronto, 2010). In addition, all new traffic control signal installations will be equipped with pedestrian countdown signals.

The City of Greater Sudbury has also begun the process of installing pedestrian countdown timers along some of the main thoroughfares at many of the busiest intersections in the City. By the end of 2010, approximately 47 of the intersections in the City (40%) will be retrofitted with countdown timers. Pedestrians in Greater Sudbury would greatly benefit from the development of a plan that would see all intersections outfitted with pedestrian countdown timers by 2015. Additionally, all new traffic signal installations should include these countdown signals.



(11) Using the Priority Indexing System ensure that traffic calming measures are implemented on residential and local streets in high pedestrian traffic areas to ensure the safety and security of pedestrians.

(12) Ensure infrastructure to improve connectivity between destination points, such as footpaths, are included in new developments.

Connectivity within new developments as well as connectivity to other destinations should be explored at planning stage of new developments. Connections should be sought between neighbourhoods and schools, shopping and other major activity centres.

(13) Work to improve the pedestrian connections in existing neighbourhoods and between existing destination points.

In the City of Greater Sudbury, there are some instances where neighbourhood pedestrian passageways that are indicated in the plans of subdivisions were never developed into formal paths. In many cases the abutting land owners have incorporated these corridors into their property (e.g. extended their lawns over the City owned property). These corridors should be identified and investigated as to whether or not they should be formally developed.

One of the factors that encourages walking is creating pedestrian routes that are more direct than driving routes. Due to the geography of Greater Sudbury many of these shortcuts are characterized by stairways, tunnels or underpasses. By making these shortcuts attractive and addressing any associated safety concerns, more individuals will be encouraged to walk. These types of improvements are an easy and cost effective way to encourage walking in the City.

(14) Continue to ensure that traffic signals provide pedestrians with sufficient time per provincial standards to cross major thoroughfares safely, particularly for pedestrians with limited mobility, including those using wheelchairs, scooters and other supportive equipment.

- Pedestrians need to be educated about how to properly use the pedestrian traffic signals.
- Identified intersections should be routinely audited to ensure that ample time is available for pedestrian crossing.
- A well-defined process to monitor or report specific conditions of locations or concerns is required.

"The most frustrating part of walking in Sudbury is the lack of time to cross the street. I have had cars practically bump me off the road, honk at me because there is so little time to cross."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

Transport Canada has stated that extending the time of pedestrian crosswalk signals will make walking much safer for seniors, individuals with limited mobility as well as all other users (2009). Priority should be given to areas of the community with larger populations of seniors and low income individuals as they are the most likely groups to be using the pedestrian infrastructure on a regular basis. Areas of the City which have been identified as having a greater proportion of low income individuals include Minnow Lake, the Donovan, the Flour Mill and Downtown, according to "A Social Profile of Greater Sudbury" produced by the Social Planning Council (2009).

(15) Complete the Junction Creek Waterway Park as an Active Transportation Corridor in Greater Sudbury by 2015.

Many individuals participating in public input sessions cited the Kate Pace Way in North Bay as the type of infrastructure they would like to see in Greater Sudbury. The Junction Creek Waterway Park extends across the city and when completed will become an excellent non-motorized transportation route (2010).

There are many community groups and individuals interested in seeing this Waterway Park completed (e.g. Junction Creek Stewardship Committee, Rainbow Routes Association). As of 2010, approximately 60% of the Waterway Park is complete. This non-motorized route parallels Junction Creek and will provide an active east-west transportation route through the city's highest population density regions.

4.5.3 Public Awareness & Education

(16) Develop and promote education and awareness programs for both pedestrians and motorists.

In 2005, the City of Toronto launched a new advertising campaign to encourage both pedestrians and drivers to use caution on the roads. Following the success of the "Please Drive Carefully – We're all Pedestrians" campaign in 2003-2004, this campaign reinforces the theme that everyone needs to take care and be courteous as they make their way around Toronto (www.toronto.ca/transportation)

A program to educate pedestrians regarding how to remain safe while walking should be developed and implemented by local organizations. Materials could cover such topics as to where roadways should be crossed, which side of the road individuals should use when no sidewalk is present and motor vehicle awareness. The goal of this program would be to stress the importance of maintaining safe walking practices and reducing pedestrian injuries in the City of Greater Sudbury

"As someone who walks to and from work every single day (me and my husband both), I can say with conviction that there is little to no respect for pedestrian traffic in this city. I am routinely almost hit by cars at 4-way stops and at crosswalks it is extremely rare that a car will actually stop to let you cross. These facts make it very stressful for walking as much as me and my husband do. The traffic respect for us as walkers is non-existent."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

Educating motorists about the rights and responsibilities of sharing the road with pedestrians should be undertaken, especially at intersections. This could involve a series of measures that include effective training, awareness campaigns and enforcement. Critical training instruments to educate motorists could include support for the enhancement of drivers training and exam components related to pedestrians.

(17) Develop a user-friendly "Transportation" page on the City of Greater Sudbury website to include links to all forms of transportation information

Many cities incorporate all transportation information in one central location on their city website where information or links can be found concerning all modes of travel both within the city and out (e.g. VIA Rail Service and Greyhound and Ontario Northland bus services). This webpage should also include information regarding the Highway Traffic Act and municipal by-laws as they apply to pedestrians.

For example, the website of the City of London, Ontario has such a page:

<http://www.london.ca/d.aspx?s=/Transportation/default.htm>

(18) Conduct educational blitzes at high-profile intersections in the City of Greater Sudbury.

Public education and awareness are essential toward contributing to an increased sense of safety for pedestrians and cyclists in the City of Greater Sudbury. Both the Sudbury Regional Police and the Sudbury District Health Unit could use this opportunity to educate and advise walkers, cyclists and motorists about both the rules of the road and the health benefits of using active modes of transportation. Media coverage of these blitzes would also help to raise awareness of these issues and to educate the public on these issues.

4.6 Future Considerations and Potential Initiatives

(1) Potential Pilot Project - Reinstate "Amble-Scramble" at the intersection of Elm and Durham Streets.

Amble-Scramble intersections have been found to be safer in areas where there are large volumes of pedestrians. This type of intersection infrastructure allows individuals to cross diagonally across the intersection while traffic in all directions is simultaneously stopped. This allows for the efficient movement of pedestrians, as it does not require that individuals wait for two pedestrian change intervals to cross to the opposite corner of the intersection.



Figure 5. "Amble-scramble" intersection at Dundas Square (Dundas and Yonge) in Toronto, Ontario

The City of Toronto currently has two "amble-scramble" intersections, with the most notable situated at Dundas Square, at the intersection of Yonge and Dundas Streets (Figure 5). The other intersection is situated at Yonge and Eglinton Streets. A third Pedestrian Priority Intersection in Toronto is slated to begin on October 9, 2010 at the intersection of Yonge and Bloor Streets.

(2) Systematically reduce the amount of on-street parking in the Downtown area.

Copenhagen, Denmark has introduced a plan to reduce the number of on-street parking spaces in the City's core. The plan calls for the removal of 2-3% of on-street parking spaces per year, in order to facilitate the ongoing development of pedestrian infrastructure.

The perception among downtown merchants in Greater Sudbury is that the availability of on-street parking is necessary to encourage shoppers to frequent their business. A study completed in 2009 in Bloor West Village (Toronto) discounted this notion. Similar to Greater Sudbury, the common public perception is that on-street parking is vital to business along Toronto's major arterials such as the Bloor-Danforth corridor, and that bike lanes and other infrastructure for active transportation will hurt commercial activity if introduced at the expense of parking (Clean Air Partnership 2010). This notion is often used as a justification for choosing not to make the changes to our streets that could provide greater space, comfort and increased safety for pedestrians and cyclists.

Clean Air Partnership determined that bike lanes and other infrastructure for active transportation benefit local commerce, and support for active transportation infrastructure is high among both merchants and City residents (2010). Additionally, it was found that people who arrive by transit, foot, and bicycle visit stores more often and report spending more money than those who drive.

The City of Greater Sudbury could undertake a similar study of businesses and their customers in the Downtown core in order to determine the perceptions of the business owners regarding the importance of on-street parking. This is a potential initiative which can have an important impact on the safety and pleasantness of the pedestrian environment in the Downtown core.

(3) Potential Pilot Project - Car-Free Saturdays in the Downtown core between June 1 and October 31.

Implementing a car-free day of the week during summer months is quickly becoming the norm in many Ontario cities. This summer, Kingston will have two car-free Sundays in an attempt to get more pedestrian traffic on the city's main thoroughfare, Princess Street. Retailers on this main street are supportive of the initiative to have a car-free zone, as they believe that their businesses will see an increase in sales on these days as a result of heavier foot-traffic (Lea 2010).

Car-free days range in their implementation from pilot projects to full-scale pedestrian-only streets or malls. Although the City of Kingston is having two car-free days as a pilot project in summer 2010, many other cities have already successfully implemented pedestrian only streets either permanently or for a portion of the year:

Kensington Market in Downtown Toronto is a great example of a successful car-free initiative. During the summer (May-October), the Market goes car-free on the last Sunday of each month (www.kensington-market.ca 2010).

The City of Greater Sudbury has already had success with several unofficial car-free days during local festivals and events in the Downtown core. These events include the annual Santa Claus Parade, the 2010 Olympic Torch Relay, and *Blues for Food*, as well as the 2009 Savour the Street Dinner which turned Durham Street into an outdoor restaurant for an evening.



The most notable car-free Downtown attraction is *Ribfest*, a hugely successful event held annually on Labour Day weekend. This event attracts thousands of local residents and tourists to the corner of Larch and Elgin Streets where only pedestrians are allowed access during the festival.

Figure6. Greater Sudbury Ribfest, held annually on Labour Day Weekend at the corner of Larch and Elgin Streets attracts thousands of local residents.

Turning Durham Street into a pedestrian only zone on Saturdays during the summer months could potentially bring much needed foot traffic into the Downtown core. Additionally, disallowing vehicular access to the street for cars would create a safe area where parents could bring small children to learn to ride a bike or rollerblade, while potentially highlighting the importance of physical activity in the community. If successful, Durham and/or other areas of Downtown could become permanent pedestrian-only streets in the future.

(4) Research “Flat Top” sidewalk design used in Ottawa and Toronto.

"Stop making driveways for cars instead of bikes/pedestrians. Cars can easily go over the curb and sidewalk, there is no reason to form the sidewalk so that cars can go across it without going over a bump - I have seen many people fall (including children falling off bikes and into traffic)."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

Walking in the winter can be particularly unsafe due to the freeze-thaw cycles and the build-up of snow and ice, making the sidewalks difficult to navigate for individuals with limited mobility such as seniors or those with a physical disability.

Ottawa has recently completed a pilot project dedicated to the development of a new kind of sidewalk. The new flat top design provides at least a metre-wide flat passage way and restricts ponding of water to the shallow ramp area at the street, not over the entire sidewalk (Figure 7). In Ottawa, the disabled community reports that these new sidewalks remain passable in the winter and are easier to navigate in warmer seasons (Doucet 2010). In addition, the visually impaired find it easier "to follow" the new sidewalks because the flat area more clearly defines a safe walking space than older sloped sidewalks. Mothers also report it is easier to push a carriage on these sidewalks in addition to walking with other small children.



Figure 7. Flat-top sidewalk design currently utilised in Toronto, ON and Ottawa, ON.

(5) Alternative methods to traditional painting should be examined for crosswalk markings at high traffic intersections, in an effort to prolong the life of on-road markings.

Due to the widespread use of salt on the roads in Greater Sudbury during the winter months, the roads are often left with faded, barely visible markings after the winter season. Currently, lines on the roads in the City of Greater Sudbury are re-painted on an annual basis.



One impressive alternative to paint is thermoplastic. Thermoplastic is a polymer that turns to a liquid when heated and dries to a very glassy state when cooled sufficiently. Thermoplastic is applied in sheets to the asphalt using high heat. Benefits of this type of roadway marking are that it visually enhances the crosswalk, preserves the existing asphalt surface and because the thermoplastics are more durable than traditional paint, it results in a longer lifespan than typical crosswalks markings (New York City Street Design Manual 2009). As in any other

application, thermoplastics will wear the most at the points of greatest abrasion from vehicle tires and may need to be touched-up or re-applied. Thermoplastic markings are expected to last up to 5-7 times longer than standard paint. However, this type of roadway marking can be costly.

A pilot project weighing the benefits of thermoplastics against having to repaint the lines each year could serve to benefit the City in numerous ways. Thermoplastic has been successfully used in other metropolitan areas, including New York City and Toronto (Figure 8). Construction at the York Street and Paris Street intersection in the summer of 2010, as part of the development of the new Grace Hartman Amphitheatre, will possibly allow for a thermoplastic crosswalk pilot project.



Figure 8. Thermoplastic crosswalk in Toronto, ON (Lawrence at Avenue Rd).

(6) Potential Pilot Project - Active & Safe Routes to Schools

Working in partnership with school boards in the City of Greater Sudbury, an Active & Safe Routes to School pilot project could be developed and implemented as a means to getting more children to walk and bike to school on a regular basis. Building on a successful pilot project, a partnership led by Green Communities Canada will receive \$2.18 million for a Canada-wide project to expand active school travel, using School Travel Planning. Partners for this project include active transportation organizations in all provinces and territories.

In addition to School Travel Planning, Workplace Travel Planning should also be examined in an effort to ensure that individuals commuting to work can investigate alternative modes to the traditional motor vehicle, including walking, cycling and transit or a combination of these modes.

For more information please visit Active & Safe Routes to School:

www.saferoutestoschool.ca/schooltravel.asp

For further information and a list of resources, consult Appendix J

5.0 Cycling: Learning to Share the Road

5.1 Objective: To create a safe, cycle-friendly community.

Bicycle infrastructure and a connected network of routes play an integral role in any transportation system. Cycling is an efficient means of getting to a destination and a proven method of improving individuals' health and the environment. When Greater Sudbury residents were asked how often they have cycled from home to a series of routine destinations in the last 12 months, 51% of respondents (49% of low income respondents) stated that they had never cycled to work, school, shopping or a transit stop, although 82% of individuals own or have access to a bicycle.

In order to increase the share of cycling in Greater Sudbury, public concerns about cycling need to be addressed. From data collected during the public input phase of the Sustainable Mobility plan, safety (53%) and weather (43%) have been identified as the top two concerns preventing individuals from choosing to cycle as a method of transportation. As well, low income groups identified not owning or having access to a bicycle (40%) as a significant concern. All respondents recognized the concern of travel distance (30%)

In addition to these concerns, individuals identified the lack of adequate and secure bicycle parking facilities as a hindrance to choosing cycling as a mode of transportation. Nearly all low income focus group participants have had at least one bike stolen.

Cyclist safety is extremely important. Between 2004 and 2008 approximately 329 individuals per year required hospital visits for cycling injuries in Greater Sudbury (Ontario Ministry of Health and Long-Term Care 2009). This figure does not include those individuals who did not seek medical attention for injuries they sustained while cycling. In 2009, there was one cycling death in Greater Sudbury.

Results of the Sustainable Mobility Plan public input survey indicate that individuals would choose to cycle if the proper supporting infrastructure was in place. In Greater Sudbury, approximately 77% of general respondents and 73% of respondents with average annual household incomes of less than \$20,000, agree with this statement (Figure 9). According to the 2004 National Transportation Survey, approximately 65% of Canadians strongly (43%) or somewhat (22%) agree that they would make use of dedicated on-road bike lanes to get to work.

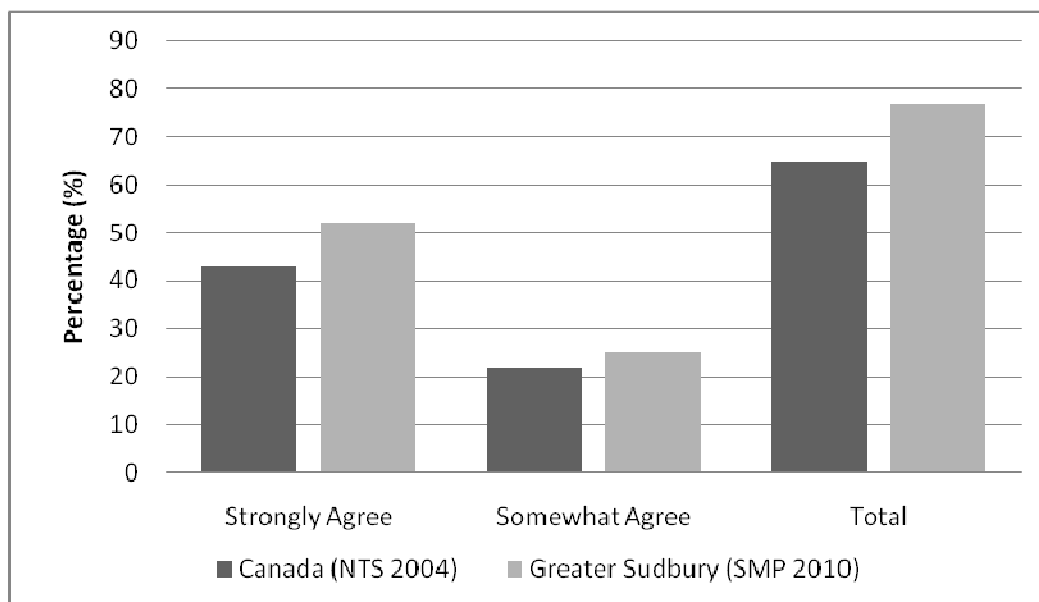


Figure 9. Proportion of individuals who would use a dedicated on-road bike lane which would take them to their work place or school in 30 minutes or less at a comfortable pace.

For many in Greater Sudbury's low income community, cycling is an affordable, efficient transportation option when compared to owning a vehicle or using public transit (Figure 10).

	Vehicle	Public Transit	Bicycle	Walking
Monthly Cost	\$721.33 CAA 2009 Driving Costs for a Mid-Sized Sedan	\$70.00 Cost of one adult 31-day pass for Greater Sudbury Transit	\$15.80 Cost of purchasing a new bike plus an annual tune-up	FREE

Figure 10. Average monthly costs for various modes of transportation in the City of Greater Sudbury, 2010

5.2 Challenges

(i) Cycling infrastructure must be able to accommodate the two types of cyclists in the City of Greater Sudbury,

There are two types of cyclists in the City of Greater Sudbury, and this creates major challenges in developing cycling infrastructure to accommodate both. A study sponsored by the U.S. Department of Transportation (Schimeck, 1996) recommends that planning for cycling facilities consider these two distinct groups of cyclists.

Group A: These cyclists operate their bicycles much like they would motor vehicles. They tend to be current users of arterial and collector streets and are best served by direct access to destinations via the street network. This direct access allows them to operate at maximum speed with fewer delays.

Group B: A more common type of cyclist is the casual or basic cyclist who is less confident in his/her ability to operate in traffic without special considerations for bicycles. This type of cyclist requires more comfortable access to destinations. Ideally this access would be along direct routes along lower volume streets or designated bicycle facilities. On arterial routes, bike lanes, paved shoulders or separate bicycle paths may be required, depending on the volume and speed of the particular road.

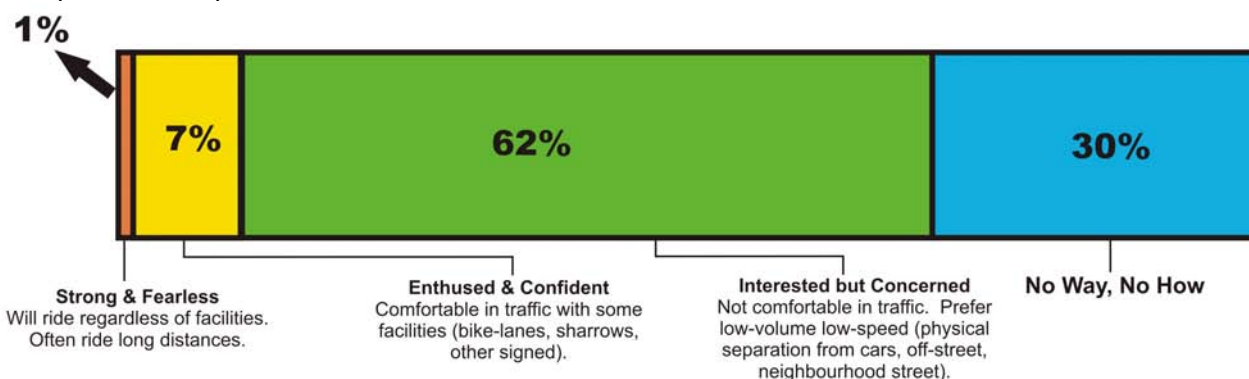


Figure 11. Adopted from *Trails for Active Transportation -City of Greater Sudbury* created by Walk and Bike for Life, 2009

A study of cyclists in Portland, Oregon shows that 62% of riders fall into the “interested but concerned” category. To make a difference in the habits of residents, planners must satisfy the concerns of this group. Bicycle infrastructure should not be considered finished until it is safe enough for the most vulnerable commuters – namely children, youth and the elderly (8-80 Cities 2010). In order to increase the share of cycling in the City of Greater Sudbury, we must plan for both types of cyclists, but also keep in mind the 8-80 Rule.

The 8-80 Rule: is a tool for making decisions about our built environment, in particular pedestrian and cycling infrastructure, based on what would be safe for an 8 year old and an 80 year old. If you would allow an 8 and 80 year old to walk or bike on the infrastructure in place then it is safe enough. If you would not allow them to continue, then it is not safe enough and requires modification (www.8-80cities.org).

(ii) According the Sustainable Mobility Plan public input survey, 53% of residents feel unsafe cycling on the roads in the City of Greater Sudbury.

In order for Greater Sudbury to become the most pedestrian friendly city in Ontario by 2015, the issue of cyclists riding on the sidewalks must be addressed. Many cyclists in the City ride on the sidewalks due to the safety concerns of sharing the road with motor vehicles.

(iii) The City of Greater Sudbury lacks adequate and secure bicycle parking or storage facilities at destinations in all areas of the City.

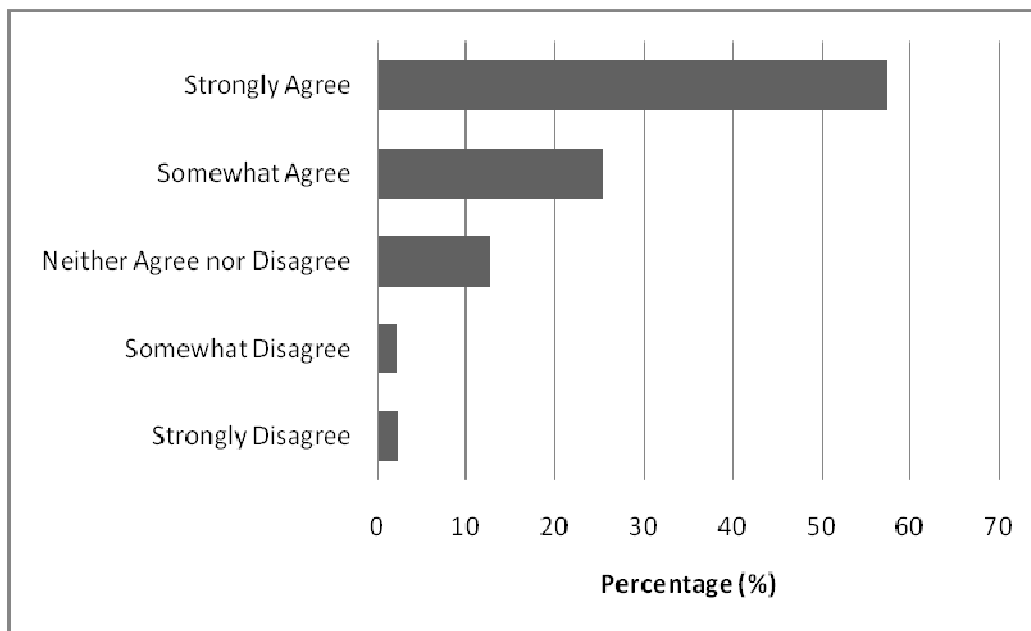


Figure 12. Percentage of individuals who believe that Transit should make active commuting easier by providing bicycle carriers on buses and secure bicycle parking facilities.

Nearly all low income focus group participants have had their bike stolen on one or more occasions.

CGS Sustainable Mobility Study, 2010

The results of the public consultation process suggest that a lack of bicycle parking facilities inhibits active commuting in Greater Sudbury. The implementation of secure bicycle parking facilities would encourage more people to use their bicycles as a mode of functional transportation. Approximately 83% of respondents either strongly (57%) or somewhat (25%) agree that they believe active transportation would be easier if secure bicycle parking facilities were provided at high traffic public places such as the public transit terminal (Figure 12).



Figure 13. Due to the lack of bicycle parking facilities in the City of Greater Sudbury, residents are forced to lock their bicycles to lamp posts, sign posts and hydro poles.

"We need bicycle parking at work, malls, restaurants, etc. - that make bikers want to bike - to leave their bikes unattended in a safe place."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010



Figure 14. Proper bicycle storage facility at a transit hub in Toronto, Ontario

By ensuring that individuals who choose to cycle have somewhere to store their bicycles without fear of theft or vandalism, more individuals will be encouraged to leave the car at home. Numerous cities in Ontario have bicycle parking zoning by-laws in place which determine the number of spaces required at institutional, commercial or retail buildings within the City.

(iv) A lack of a comprehensive plan for the development of a connected and destination-oriented bicycle route network for the City of Greater Sudbury.

(v) The Greater Sudbury Transit Rack and Roll Program is currently limited to only one route and five buses and is not well promoted.

(vi) Many workplaces do not have adequate end-of-trip facilities, including showers, lockers and change rooms.

- 20% of respondents to the Sustainable Mobility Plan survey cited "facilities at work (lockers, showers, etc.)" as an incentive that would make them choose to cycle more often.

"It is not feasible for me to use my bike to get to work, etc. due to the lack of a shower facility at work."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

(vii) Drivers, cyclists and pedestrians all require education regarding sharing the roadway and traffic laws.

A lack of knowledge of how to share the road leads to disrespect and conflict among different users, and creates unsafe conditions for both cyclists and pedestrians.

Bicycles are considered vehicles under the Highway Traffic Act. Both motorized and non-motorized vehicles must obey all traffic laws and are not permitted to ride on sidewalks or through crosswalks. Both cyclists and motorists need to be made aware that they must share the roadway.

The City of Greater Sudbury currently has a by-law which prohibits bicycles from being driven on the sidewalk and is stated as follows:

"2010-1-16: No person shall drive a vehicle on a sidewalk except for the purpose of directly crossing the sidewalk on a permanent or temporary driveway."

"I have lived in three other communities, Niagara Falls, Ottawa and London, ON. I never owned a car until I moved here. I loathe to drive my car but just try to catch a bus or drive these roads on your bike. It's not easy and it's not safe."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

(viii) Cycling in the outlying communities of Greater Sudbury is a significant challenge in terms of safety. Outlying communities do not have a connected network of sidewalks and paths, and many of these communities have provincial highways or major arterials separating their neighbourhoods.

While residents of the outlying areas would like cycling infrastructure, their greatest concerns are the lack of continuous sidewalks and the inability to safely cross arterial roadways. Many of the rural communities in the City of Greater Sudbury are bisected by large, four-lane, high speed, and high volume thoroughfares. Individuals in these areas have identified these main roads as a barrier in their communities to both active transportation and healthy lifestyles in general. Sidewalks along these corridors are often discontinuous (Figure 15), and traffic signal-controlled pedestrian crossings are often separated by large distances. In order to remain on a sidewalk along MR 80, individuals often must cross four lanes of traffic without an intersection to reach a sidewalk in order to continue their journey.

Feedback from public input sessions and focus groups held in rural communities, including Hanmer, Lively and Chelmsford indicated that the lack of sidewalks in these areas requires immediate attention prior to cycling infrastructure. In terms of cycling infrastructure, connectivity to outlying areas is a key issue. Special solutions are required to allow safe cycling and walking between adjacent outlying communities, and between outlying communities and the urban core.



Figure 15. Where the sidewalks ends on the south end of the bridge over the Whitson River near Carol Richard Park.

5.3 Low Income Considerations

The majority of the feedback related to the City's low income demographic was collected during focus groups held at various community hubs throughout the City of Greater Sudbury.

- Walking and cycling are the only means of transportation for many low income individuals.
- Nearly all low income focus group participants had their bicycles stolen on one or more occasions.
- Nearly 75% of focus group respondents have been hit or nearly hit while walking or cycling in Greater Sudbury.
- A lack of mutual respect among different road user groups was identified by individuals who attended low income focus groups.
- The Police Auction, where inexpensive bicycles can be purchased, is currently held in Azilda and is inaccessible to individuals living on low incomes and lacking vehicles.

5.4 Current Cycling Status and Initiatives

- 1) Currently two bicycle paths exist in the City of Greater Sudbury with a third slated for completion in 2010. Completed bike paths in the form of on-road dedicated lanes are situated on both Howey and Bancroft Drives. A non-motorized off-road pathway running parallel to Ramsey Lake Road will be completed in 2010. In anticipation of the expansion and development of further cycling infrastructure in the City of Greater Sudbury, paved shoulders have been widened and segregated from the road through the use of a rumble strip or the creation of a boulevard during major arterial resurfacing projects
- 2) In addition to other initiatives currently taking place in Greater Sudbury, the City has established a Bicycle Advisory Panel in order to assist City staff in "implementing a vision for a safe and attractive bicycle transit system that links communities across the City of Greater Sudbury through a network of recreational and utilitarian trails designed to promote alternative non-motorized modes of transport" (City of Greater Sudbury Website 2010).
- 3) In 2009, the Bicycle Advisory Panel was instrumental in the implementation of the "Rack and Roll" program which saw bike racks installed on five public transit buses. These busses operate primarily on Route 703, which runs between Downtown Sudbury and Val Caron, Hanmer and Capreol, in order to encourage residents of the Valley to bring their bicycles with them when heading into the urban centre. An additional five bike racks will be purchased and installed in 2010. For those individuals who live in areas not serviced by buses with a bike rack, Sudbury Transit has a policy which allows individuals to bring their bicycles directly on the bus during non-peak hours.

- 4) The Sudbury Regional Hospital has recently purchased bike lockers which will be situated at each of the main entrances to the hospital for use by hospital staff.

5.5 Recommendations

5.5.1 Policy Development

(1) As part of the next Official Plan review process, give equitable consideration to the needs of cyclists in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for cyclists and other forms of transportation improvements.

The Transportation Section of the Official Plan should be amended to include a community-wide integrated set of networks and routes that elevate the needs of pedestrians, cyclists and mass transit to a state of balance with automobile use. These amendments shall include a network of uninterrupted sidewalks and/or pedestrian trails and walkways developed through retrofitting and new development to ensure that citizens without access to vehicles are able to move through the community (Healthy Community Design, Policy Statements for Official Plans, 2010).

(2) Amend the Official Plan (Transportation Schedule) to include a Bicycle Route Network & Classification System using the draft Bicycle Route Network and Classifications System developed through public consultation and in conjunction with the Bicycle Advisory Panel for all existing roads as a starting point (Appendices C & D).

"If you build it, they will come" - Attitude in Portland, Oregon that saw the city become one of the most well-established and vibrant pedestrian and cyclist friendly cities in North America.

"People will use these things if you build them. Just trust us!"

C CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

(3) Create a Priority Indexing System for cycling to create a system that will set priorities for cyclist infrastructure improvements, installations, traffic calming and maintenance. Adopt this Indexing System into the Official Plan Review process (Appendix B – City of Victoria Sidewalk Priority Index).

The City of Greater Sudbury's Priority Indexing System could use available Geographical Information Systems (GIS) data, best practice, accident rates, traffic studies and volumes and population densities. Weighting of the index could give priority to low income and senior populations as well as commonly used routes to schools.

(a) Using the Priority Indexing System develop an Action Plan for the implementation of the Bicycle Route network following the Official Plan amendment process. This Action Plan will include detailed timelines for completion, the anticipated costs and will be in consideration of planned road work.

In outlying communities, priority should be given to sidewalk infrastructure prior to cycling infrastructure installation. To determine which roads should receive infrastructure treatments first, a variety of tools should be used including the consultation of best practices from elsewhere, GIS data, and population density.

Vancouver, BC (2010) - In 2006, the Canadian Census reported that Vancouver's mode share for individuals cycling to work increased to 4% - the highest of Canada's largest cities and second highest for all Canadian cities. As part of Vancouver's action plan to be the greenest city in the world, the City is exploring options to attract more people to cycling as a mode of transportation.

The experience of other cities suggests that perception of safety is essential to attracting more people to cycling and that separated bike lanes are perceived to be safer and more satisfying to cyclists than cycling next to traffic. The City of Vancouver is moving forward with separated bike lanes on existing bike routes in the downtown to connect key destinations, such as the central business district.

(b) Using the Priority Index System for cycling determine where complimentary traffic calming measures are required on residential and local streets in high cyclist traffic areas.

Where active transportation infrastructure intersects or adjoins the automobile network, pedestrians and cyclists are at greater risk for injury traffic calming is recommended (Healthy Community Design, Policy Statements for Official Plans, 2010).

(4) Incorporate into the Official Plan review appropriate cycling infrastructure on all new road development.

(5) Incorporate into the Official Plan Review, the mandatory requirement for commercial, retail and institutional buildings to provide bicycle parking and storage, as per a Bicycle Parking By-Law.

(6) Adopt the draft Bicycle Parking Zoning By-Law which would require a minimum number of bicycle parking spaces at retail, institutional, employment, educational and residential centers (Appendix E).

(7) Draft and adopt a by-law which prohibits the operation of motor vehicles within designated bicycle lanes or paths.

The City of Greater Sudbury currently has no by-law which prohibits the driving of a motor vehicle on a paved shoulder, including bicycle lanes. In order to ensure the safety of cyclists using the planned cycling infrastructure, a by-law should be drafted and adopted by the City of Greater Sudbury to prohibit motor vehicles from passing on the right hand side or driving on paved shoulders or bicycle lanes.

(8) Ensure that the practice of incorporating wide, paved shoulders along major arterials connecting outlying communities is continued. These paved shoulders often provide optimal infrastructure for distance “Group A” cyclists.

5.5.2 Invest in Cycling Infrastructure

A well-designed network of roadways, bicycle lanes, paths and trails throughout the community supports safe, convenient and enjoyable cycling. A transportation system must accommodate access to bicycle users of varying skill and socioeconomic backgrounds. The use of different types of sustainable transportation must occur and will require supportive infrastructure.

(9) Implement the Action Plan developed for the Bicycle Route Network following the Official Plan amendment process.

(10) Pave shoulders along major arterial roads connecting outlying communities to the urban core to provide a safe area for Class A cyclists to commute.

(11) Using the Priority Index System for cycling, install complimentary traffic calming measures on residential and local roads to create the safe conditions necessary to encourage individuals to choose cycling.

(12) Expand and promote the City of Greater Sudbury Transit “Rack and Roll” program to all transit busses by 2015.



Bicycle rack infrastructure for transit has been successfully implemented in numerous jurisdictions in Ontario, Canada and abroad. The racks offer cyclists a convenient and easy way to transport their bicycles while riding the bus. Bike racks are a welcome option for individuals who live in outlying areas of the City who wish to use their bikes to get around while they are in the urban areas.

In 2009, Thunder Bay, Ontario equipped their entire transit fleet (46 buses) with bicycle racks. During the first year of the program, transit drivers were asked to keep track of how many times the bike racks were used on their routes each day. In total, Thunder Bay saw their racks used over 7000 times in 2009 (Thunder Bay Transit).

Input from individuals at public sessions, focus groups, and through both online and intercept surveys expressed interest in seeing the Rack and Roll program expanded to all areas of the City (2010)

The Sustainable Mobility Plan public input survey has determined that similar results to those in Thunder Bay can be obtained in the City of Greater Sudbury should the Rack and Roll program be expanded to encompass all transit routes. Approximately 83% of individuals support transit providing bicycle carriers and secure bicycle parking facilities as a means of encouraging active methods of commuting. A similar proportion (84%) of individuals whose average annual household income is \$20,000 or less also supported these initiatives. It is of interest to note that 55% of individuals who either own or have access to a vehicle either strongly (31%) or somewhat (25%) agree that they would definitely choose to use a mix of cycling and transit to get to their destinations. The “Rack and Roll” program can also provide cyclists with a means to return home in inclement weather should they choose not to cycle.

"The bike rack on the bus is a great idea for long distance bikers or bikers from the outer Sudbury area."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

(13) Ensure that adequate, accessible and secure bicycle parking facilities are available at all major employment, retail and educational centers, in addition to all city-owned facilities and buildings through the enforcement of a new Bicycle Parking By-Law.

"Appropriate bicycle storage facilities will be provided at City-owned buildings and parks."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 134)

(14) Complete the Junction Creek Waterway Park as an Active Transportation Corridor in Greater Sudbury by 2015.

Many individuals participating in public input sessions cited the Kate Pace Way in North Bay as the type of infrastructure they would like to see in Greater Sudbury. The Junction Creek Waterway Park extends across the city and when completed will become an excellent non-motorized transportation route (2010.)

There are many community groups and individuals interested in seeing this Waterway Park completed (e.g. Junction Creek Stewardship Committee, Rainbow Routes Association). As of 2010, approximately 60% of the Waterway Park is complete. This non-motorized route parallels Junction Creek and will provide an active east-west transportation route through the city's highest population density regions.

5.5.3 Public Awareness & Education

(15) Develop a "Cycling in Greater Sudbury" wayfinding map outlining designated routes and information.

For both newcomers and tourists to the City of Greater Sudbury, a well-developed user-friendly way finding system and signage will increase the likelihood that individuals are able to navigate effectively through the City on bicycles. A wayfinding system for the bicycle routes in Greater Sudbury would also assist residents in finding alternative routes to get to their regular destinations via bicycle. Routes will not be used regularly until cyclists are aware that the routes exist.

(16) Develop and promote educational programs for both cyclists and motorists.

For cyclists:

Bicycle education, like vehicle driver education, is an important component of any comprehensive strategy to encourage cycling. Cycling education can increase safety levels by helping riders of all ages and abilities become aware of their responsibilities as road users. Education should encompass lessons on riding skills and bicycle maintenance. Mechanisms to educate cyclists should include but are not limited to:

- a. Provision of ongoing CAN-BIKE programs for children & youth and/or first time riders at a variety of venues.
- b. Support and encourage local CAN-BIKE instructors to ensure sustainability of education programs.
- c. Endorsement and support of Active & Safe Routes to School programming.
- d. Endorsement and support Active & Safe Routes to Work programming.

For motorists:

Educating motorists about the rights and responsibilities of sharing the road with cyclists should be undertaken. This could involve a series of measures that include effective training, awareness campaigns and enforcement. Critical training instruments to educate motorists should include but not limited to:

- a. Support for the enhancement of driver training and exam components related to cycling.
- b. Linking with auto insurance companies in the provision of education resources related to cycling (When Ontario Bikes, Ontario Benefits: A Green Paper for an Ontario Bicycling Policy 2010).

(17) Develop a user-friendly “Transportation” page on the City website to include links to all forms of transportation information.

Many cities incorporate all transportation information in one central location on their city website where information or links can be found concerning all modes of travel both within the city and out (e.g. VIA Rail Service and Greyhound and Ontario Northland bus services). This webpage should also include information regarding the Highway Traffic Act and municipal by-laws as they apply to cyclists.

For example, the website of the City of London, Ontario has such a page:

<http://www.london.ca/d.aspx?s=/Transportation/default.htm>

(18) Conduct educational blitzes at high-profile intersections in the City of Greater Sudbury.

Public education and awareness ranked near the top of factors which would contribute to an increased sense of safety for pedestrians and cyclists in the City of Greater Sudbury. Both the Greater Sudbury Police Services and the Sudbury District Health Unit could use this opportunity to educate and advise walkers, cyclists and motorists about both the rules of the road and the health benefits of using active modes of transportation. Media coverage of these blitzes would also help to raise awareness of these issues and to educate the public on these issues.

5.6 Future Considerations and Potential Initiatives

(1) Develop a partnership in order to facilitate the movement of the Bicycle portion of the Police Auction into the Downtown Core to improve access to inexpensive bicycles for individuals earning a low income.

This auction is an important opportunity to access relatively inexpensive bicycles for low income individuals. Cost is often a prohibiting factor to owning a bicycle for individuals who are financially marginalized. Currently the Police Auction is held in Azilda, a rural community approximately 13 km north-west of Downtown Sudbury. Azilda is accessible primarily by vehicle due to the high speed and traffic volume on Municipal Road 35.

The majority of the low income populations in Greater Sudbury are centered in and around the Downtown area (A Social Profile of Greater Sudbury 2009). Moving the bicycle portion of the Police Auction into the urban centre of the City would allow more individuals to access the inexpensive bicycles. Bicycle ownership would improve the mobility of these individuals.

(2) Develop private partnerships to establish Mobility Hubs in predetermined activity centres in order to encourage mixed-use transportation by easing the transition between modes (walk or cycle then ride public transit). Potential Mobility Hubs: Valley East Shopping Centre, Downtown, Southridge Mall, New Sudbury Shopping Centre.

Ensure that the necessary amenities are present in order to facilitate the combined use of active modes of transportation with transit, including (but not limited to):

- Secure and adequate bicycle storage
- Weather protected waiting areas
- Washrooms/Change rooms
- Service information centre
- Service kiosk with refreshments and other amenities

(3) Examine the feasibility and effectiveness of painting bicycle lanes a solid colour, through a pilot project on Howey Drive or Bancroft Drive.

Bicycle lanes increase the visibility of cyclists in the transportation system and they also give motorists the security of knowing where to expect cyclists. Intersections in particular pose a high risk to cyclists when motorists aren't aware of their presence. In the late 1990s, Portland, Oregon began researching techniques that could help to improve the situation in these conflict areas. They determined that the most promising, cost-effective technique was to use coloured pavement markings to delineate the conflict area (City of Portland 1999).

The results of the Portland pilot study - painting conflict areas with blue paint - demonstrate a statistically significant increase in the number of times that motorists yielded to cyclists and appeared to look for them more often before crossing the bike lanes (City of Portland 1999). Since this study was conducted, Portland and numerous other jurisdictions have begun to use green paint for this purpose as it was shown to provide increased visibility, particularly at night and in low light conditions.

Painting the bicycle lanes a different colour and including the bicycle symbol in the lane, particularly at conflict areas such as intersections, could ensure that motorists are generally more aware that cyclists have the right of way. This will also assist in ensuring that motorists are watching for cyclists.



.Figure 16. Bicycle lane painted green for better visibility in New York City

(4) As part of the pilot project above, implement "bike box" infrastructure at the intersections of Bancroft/Bellevue and Bancroft/Second to increase visibility of cyclists to motorists by providing a staggered stop.

Currently, this type of bicycle infrastructure is illegal under the Highway Traffic Act. Under the Act, cyclists are required to remain as far to the right and as close to the curb as possible when occupying a motor vehicle lane in traffic. This pilot would require an application to the Ministry of Transportation for permission to conduct this type of pilot project.



Figure 17. “Bike-Box” infrastructure allow bicycles to wait at traffic lights ahead of cars, to improve visibility.

(5) Form a local partnership to facilitate the development of a bicycle library, rental system or co-operative.

Another approach to improving the accessibility of bicycles for individuals in the City of Greater Sudbury would be to implement a bicycle lending or rental service. Currently there are very few bicycle lending programs in place in Canadian cities. The most notable recent program is BikeShare in Toronto. BikeShare was a program run by the Community Bicycle Network between 2001 and 2006. The service saw a fleet of 170 bicycles which were situated at 18 hubs throughout the City and were available to individuals who purchased inexpensive annual memberships.

Bike Share Algoma, a 2010 initiative by two students at the University of Algoma, plans to launch the first bicycle sharing co-operative in Sault Ste. Marie, Ontario. The group has been soliciting donations of new or gently used bicycles to be used in the program. The entire program has been organized by volunteers and the group currently has no financial support. Annual membership in the cooperative will range from \$10 for students, seniors, and the underemployed, to a maximum of about \$25. There are also opportunities for individuals to volunteer their time in return for free use of the bicycles.

In Greater Sudbury, there is great potential in having a bicycle lending program, especially in terms of accessibility to low income individuals, students and tourists. This initiative could potentially be undertaken by the Sudbury Tourism Partnership to provide inexpensive bicycles to rent or borrow. As part of a visitor experience, a bicycle rental could be included as an incentive for visitors to cycle the Tour de Sudbury route around Ramsey Lake. This would be an interesting, cost-efficient way to explore the City from a different perspective, enjoy the renowned natural beauty of the City and retain visitors. This bike lending initiative would also benefit short-term residents (e.g. post-secondary students) who have not transported their bicycle to the City.

(6) Partner with a local employer to install proper end-of-trip facilities in order to determine the success and feasibility of such a project on a larger scale.

End-of-trip facilities can include a variety of supportive resources and infrastructure that active transportation commuters could utilize. These facilities can range in complexity from a solitary bathroom stall with a sink, toilet and ample room to change, to a full shower, locker and change room facility.

- 20% of respondents to the Sustainable Mobility Plan survey cited "facilities at work (lockers, showers, etc.)" as an incentive that would make them choose to cycle more often.

Throughout the public input process of the Sustainable Mobility Plan, employees from countless workplaces located in Greater Sudbury expressed interest in having end-of-trip facilities incorporated into their workplaces. Local businesses should be approached in order to secure a pilot project for this type of supportive infrastructure.

(7) “Crossrides” for cyclists, “Crosswalks” for pedestrians

A “crossride” is a crosswalk for bikes and has painted lines that parallel cross walks. It provides a dedicated and safe space for cyclists crossing intersections. Crossrides are being implemented in New York City but are currently prohibited in Ontario under the Highway Traffic Act. However, there is currently a crossride pilot project in Mississauga, Ontario (Appendix F – Mississauga crossrides pilot design drawing) Greater Sudbury should follow the progress of this pilot project to determine whether crossrides could be implemented in Greater Sudbury.

(8) Form a partnership with a local organization or retail outlet to provide bicycle locks either at a reduced cost or no cost to agencies that provide services for low income individuals.

As previously stated, individuals from all focus groups have had at least one bicycle stolen. Not only is it important for these individuals to have somewhere safe to keep their bikes while they are at destinations, but they need to be able to lock up their bikes as well. Many times the reason that bikes are stolen is because individuals do not have enough funds to purchase a proper bike lock. By making locks affordable and available to those individuals who require them most, the incidence of bicycles being stolen may potentially decrease.

For further information and a list of resources, consult Appendix J

6.0 Public Transit: Making Connections

Every transit trip starts and ends with a walk or a pedal.

6.1 Objective: To encourage a multimodal transportation system that combines walking, cycling and transit.

"The provision of public transit must be supported by compatible land use policies and sound urban design principles in order to promote transit use as a viable option for residents."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 126)

Public transit is an essential part of any sustainable mobility or transportation plan. Although it is a motorized form of transportation, transit has the potential to greatly reduce the number of single-occupant vehicles on the road. Due to the spatial arrangement of Greater Sudbury, it is not always feasible to bike or walk to a particular destination. In these circumstances, public transit can be either an alternate or complementary sustainable option.

The focus of this Plan is to examine walking and cycling in the City of Greater Sudbury; however, many transit-related issues were raised through the public input process. These issues could be addressed by Greater Sudbury Transit, as increased transit ridership plays an integral part in improving sustainable mobility in the community.

Cycling and transit are compatible, complementary methods of transportation. Increased accessibility to transit will play a vital role in facilitating better connections between the rural communities in the City of Greater Sudbury and the urban core. The ability of individuals to either transport themselves over long distances or to transport their bicycles on the bus will greatly improve their access and connectivity with the more densely populated areas of the City. Transit services and bicycle facilities should be integrated to provide cyclists with reasonable alternatives for both moderate and long-distance trips.

Public transportation services contribute to the social and ecological health of our community by removing geographic barriers to employment and social services opportunities and by reducing the environmental and infrastructure costs of transportation (Greater Sudbury Public Transit Website, 2010).

When access to transit for both pedestrians and cyclists is poor, they simply do not see transit as a viable transportation option (Metrolinx September 2008). Enhanced transit services and incentives to encourage transit use can support a physically active lifestyle.

Efforts to increase transit accessibility and usage may not only increase the proportion of individuals who obtain a minimum of 30 minutes of physical activity on a daily basis, but they may also decrease road congestion and air pollution (Besser & Dannenberg, 2005).

6.2 Challenges

***Please Note:** Based on consultation with low income groups it is clear that transit is an important issue, largely because low income individuals often do not own or have access to a vehicle.*

(i) Compared to the provincial average for public transit ridership (13%), Sudbury has a significantly lower proportion of individuals who use transit (5%) (Statistics Canada Greater Sudbury Community Profile Census, 2006).

(ii) Transit stops are often inaccessible or unsafe as a result of the lack of sidewalks, shelters, cycling infrastructure, and maintenance during the winter months.

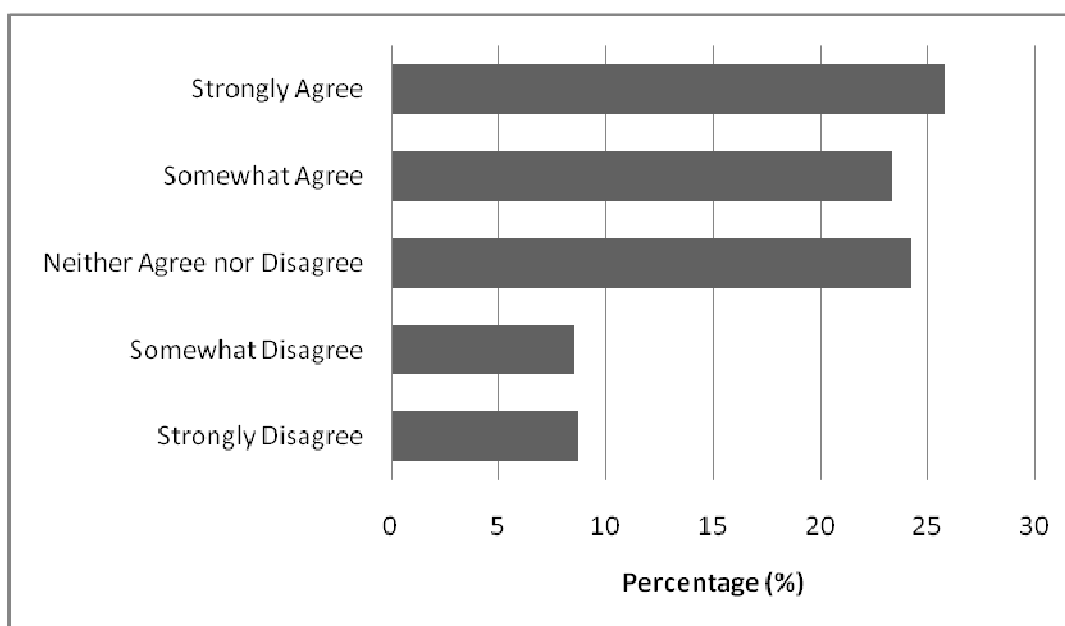


Figure 18. Percentage of individuals who would definitely choose to use a mix of cycling and transit to get to their destinations if there were better links between bike routes and transit routes.

(iii) Both new transit users and visitors have difficulty navigating the Greater Sudbury Transit system as a direct result of the limited availability of information (signage), particularly at major transit destinations, stops and aboard buses.

(iv) Several important transit policies are not included in the Rider Guide and therefore may not be accessible to everyone using the transit system.

(v) The current Greater Sudbury Transit policy requires parents to remove children from strollers while on board the bus.

- A parent with a child in a stroller must remove his or her child from the stroller and fold up the stroller while on the Transit bus regardless of time of day, volume of users or size of the stroller. 54% of low income families are single parents with children under 18 years of age (Social Profile of Greater Sudbury, SPC 2009).
- This policy disproportionately impacts female-led single parent families, the majority of which live in poverty and rely on transit to transport their child to daycare for employment purposes, etc.

(vi) Transit is often financially inaccessible to low income individuals.

- Currently one return trip via Sudbury Transit costs the same as it does to park all day in a municipal parking lot in the Downtown core (\$5).
- A monthly bus pass of \$72 represents 12% of the monthly income of a single person living on Ontario Works, which is currently \$589 (Social Planning Council, Sudbury 2010).

(vii) There is a significant lack of bicycle storage at key transit destinations and stops (Shopping Centres, Downtown Bus Terminal, and Education Centres).

(viii) The Greater Sudbury Transit Rack and Roll Program is not well promoted and is currently limited to only one route and five buses. The option of bringing a bicycle on the bus during non-peak hours is not clearly publicized.

6.3 Low Income Considerations

Public transit plays an important role in the mobility of low-income individuals. Public transit is currently the most cost effective mode to travel over long distances within the City of Greater Sudbury. The cost of a monthly transit pass is roughly 1/10 the price of owning a motor vehicle (Figure 10). However, rising operating costs are resulting in increased cash fare prices, thus making transit more likely to be financially inaccessible to low income individuals.

- Many low income participants in focus groups said that transit is rarely an option for them, due to the cost.
- Parents travelling alone with one or more children and using a stroller have difficulty balancing their child(ren) and packages while getting on the bus and then while having to close up the stroller (current transit policy states that children must be removed from the stroller and stroller folded up while on the bus).
- Exact change is required to board the bus at the Transit Centre Kiosk. Currently there is no Interac direct payment machine available at the Downtown Terminal for bus pass purchases.
- Many low income individuals do not have access to a computer, the internet, or a cell phone required to look up current bus schedules or pertinent transit policy information not currently available in the hardcopy of the transit Rider Guide.

- Individuals who do not own vehicles still require a reliable form of transportation to a variety of destinations including employment. Sudbury Transit is often the only option available.

"... most employers will secretly not hire you if you take Sudbury Transit."

CGS Sustainable Mobility Plan Public Input Survey Respondent, 2010

Walking to and from public transportation can help physically inactive populations especially low-income and minority groups, attain the recommended level of daily physical activity (Besser & Dannenberg, 2005).

Recently, Lachapelle and Frank (2009) concluded that the lower-income group in their study, which had higher transit use and lower car ownership rates, was positively associated with meeting daily physical activity recommendations of at least 30 minutes.

6.4 Current Transit Status and Initiatives

- 1) The City of Greater Sudbury owns and operates 60 busses, 50 of which are able to kneel for patrons requiring assistance boarding the bus.
- 2) There is a fleet of 13 Handi-transit buses, which are privately owned and operated.
- 3) The City has bike racks on five transit buses. These buses operate primarily on Route 703, which travels between Downtown Sudbury and Val Caron, Hanmer and Capreol, in order to encourage residents in the Valley to bring their bicycles into the urban centre with them.
- 4) In 2010, an additional five busses will have bike racks installed for use.
- 5) Sudbury Transit has a policy which allows individuals to bring their bicycle directly on the bus during non-peak hours.
- 6) Greater Sudbury Transit provides up to \$500 per qualified agency (i.e. not for profit) to provide transit assistance for low income groups.
- 7) Students at both Laurentian University and College Boreal are able to access Greater Sudbury Transit at a reduced rate which is absorbed into the cost of tuition. Students are able to use their student identification cards to board transit buses an unlimited number of times between September 1st and May 31st each year.
- 8) According to the CGS Transportation Study Report (2005), approximately 83% of Sudbury's population is within 400m of a transit route.
- 9) Food Basics on LaSalle Blvd. has entered into a partnership with some of the seniors residences located in the Downtown area in order to provide a school bus shuttle service so that residents can get their groceries up to three times per week. This service is well received in the seniors community as an alternative to Sudbury Transit and is provided free of charge to individuals using the service. The full cost of the bussing is absorbed by Food Basics.

- 10) Greater Sudbury Transit funded a program in 2009 to provide free transit ride passes to elementary and high school students which were handed out through the public library system.

6.5 Recommendations

6.5.1 Policy Development

(1) As part of the next Official Plan review process, give equitable consideration to the needs of transit users in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for transit users and other forms of transportation improvements.

(2) Adopt a new policy which would allow parents to keep children seated and secured within a stroller while riding the Transit.

Many cities in Canada allow children to remain seated in the stroller while on public transit. Ottawa and Thunder Bay have this type of policy in place, with restrictions on the size of the stroller that can be brought on the transit (Appendix G – Thunder Bay Strollers on Busses Guidelines). This type of policy which does not allow children to be left in strollers disproportionately targets mothers and families of the low income community.

(3) Ensure that at least one member of the Greater Sudbury Transit Committee be a CGS Transit user.

It is important that the transit committee always be aware of what it is like to be a transit user and the issues that users encounter. Committee members should establish a routine of riding transit, both on weekdays and weekends through all months of the year, to gather anecdotal evidence on transit use.

(4) To potentially improve upon the \$500 per qualified agency municipal transit ticket policy; Sudbury Transit could make public transportation even more accessible to people living on low incomes by adopting a “Matching System” for transit ticket grants to qualified agencies as per the Victoria BC model.

A definition of “qualified agencies” needs to be developed as well as a means to educate the public as to the availability of transit tickets from qualified agencies.

Additionally a sustainable plan should be developed to make it equitable for students, children and youth to be able to use Transit. Currently, students receive only a \$6.00 discount on 31-day transit passes and no discount on 5- and 10-ride cards. Meanwhile, seniors (age 55 and older) receive a discount of \$27.00.

Victoria, BC – a not-so-new affordable transportation model developed in BC's Capital Region – is catching on. Beginning in 1997, transit officials and community groups worked to develop a system that would make public transportation more accessible to people living on low incomes. Today, 67 social service organizations buy tickets from the Community Council – the program's coordinating agency – and their purchases are matched 1:1 by free tickets from the Victoria Transit Commission. Some 80,000 tickets and 440 passes are now distributed annually to people in need.

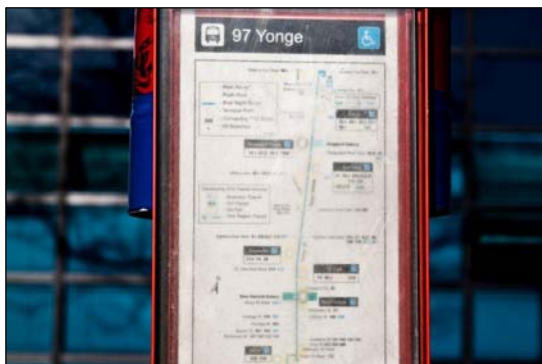
(5) Using the Priority Index System developed in Walking and Cycling, give priority for maintenance and snow clearing of transit stops in high traffic pedestrian areas - particularly in areas where there are high densities of seniors, low income individuals, children and youth.

6.5.2 Invest in Transit Related Infrastructure

(6) Expand and promote the City of Greater Sudbury Transit “Rack and Roll” program to all transit busses by 2015.

- Thunder Bay, Ontario recently equipped their entire Transit fleet (46 buses) with bicycle racks. Throughout 2009, Transit drivers were asked to keep track of how many times the bike racks were used on their routes each day. In total, Thunder Bay saw their racks used over 7000 times in 2009 (Thunder Bay Transit, 2010).
- Numerous individuals at public input sessions, focus groups and through the online survey expressed interested in seeing the Rack and Roll program expanded to all areas of the City.
- Many survey and public input participants were supportive of the idea of bringing their bicycles from a surrounding rural community into the City core, and being able to bike to destinations such as Laurentian University.

(7) Develop and install a detailed wayfinding scheme for the transit system including mounted schedules and displays at major destinations, hubs and stops.



- Demonstrating the connectivity between transit and both walking and cycling routes within the City, will make it easier for transit patrons to commute using sustainable and active methods.

(8) Ensure that there is adequate and secure bicycle parking or storage at the transit terminal and other key destinations and stops in order to facilitate the combination of active transportation methods with transit.

Survey respondents stated that a lack of secure bicycle parking is a major reason for not cycling to their destinations (Figure 12).

(9) Ensure that maintenance and snow clearing of transit stops is a priority for high traffic pedestrian areas where high densities of seniors, low income individuals, children and youth reside.

(10) Improve access to transit stops through the construction of sidewalks/pathways and pedestrian crossings in areas which have few or no controlled pedestrian crossing signals (i.e. Municipal Road 80).

(11) Develop a plan to expand the existing system of bus shelters using GIS priority mapping data to identify larger populations of low income individuals, seniors, children and youth.

The winter climate is a deterrent to choosing more active modes of transportation. Providing shelter while waiting for transit will make the transit experience more pleasant.

(12) Install an Interac direct payment machine at the Transit Centre Kiosk in the Downtown Terminal.

Being able to purchase your monthly pass using a debit card would improve the ease and efficiency of using transit for many users. There would be less cash on hand at the terminal (reduced theft risk) and there would no longer be the need to have an ATM machine on site.

6.5.3 Public Awareness & Education

(13) Promote transit as a healthier transportation choice for both the individual and the environment.

According to a recent study in the Journal of Public Health Policy, individuals who use transit were more likely to walk an average of 2.4 km per return transit trip and had four times the chance of meeting daily activity recommendations as those who didn't take the transit (Lachapelle & Frank, 2009). The same study concluded that individuals who drove the most were the least physically active overall. In addition to increased levels of physical activity, transit users are at a lower risk of exposure to air pollution and are exposed to up to 10 times less pollution than drivers and automobile passengers (Climate Change Connection Manitoba).

(14) Promote transit as a convenient and affordable transportation choice.

Residents who do not use transit often have misconceptions regarding the convenience of transit. These perceptions create barriers to transit use. There are many activities in which individuals can engage while on transit that they could not do if they were driving their own vehicles (i.e. cell phone use).

(15) Develop a user-friendly “Transportation” page on the city website to include links to all forms of transportation information.

Many cities incorporate all transportation information in one central location on their city website where information or links can be found concerning all modes of travel both within the city and out (e.g. VIA Rail Service and Greyhound and Ontario Northland bus services). This webpage should also include information regarding the Highway Traffic Act and municipal by-laws as they apply to pedestrians.

For example, the website of the City of London, Ontario has such a page:

<http://www.london.ca/d.aspx?s=/Transportation/default.htm>

(16) Ensure that all policies related to combining active transportation with public transit are laid out in the Greater Sudbury Rider Guide and Transit website so that the public is aware of these policies.**Policies to include in Transit Rider Guide and on Transit Website:**

- (1) Individuals are able to transport their bicycles on the bus with them during non-peak hours, when no bicycle rack is present.
- (2) "Peak Hours" as they relate to the ability of an individual to transport their bicycle on the bus needs to be clearly defined.
- (3) Define the nature of special needs that warrant the bus to be lowered or knelt and how to access this service (e.g. you must ask the driver for assistance).
- (4) Process outlining how and when bike racks can be used.
- (5) Revised policy regarding strollers on busses (Appendix G – Thunder Bay Strollers on Busses Guidelines).
- (6) Inform individuals that if the bus stop is inaccessible during the winter months that the user may wait at the nearest cleared driveway entrance for the bus.
- (7) Publicize the “Public Transit Tax Credit”. A non-refundable tax credit of 15% on personal income tax (www.cra.gc.ca/transitpass).

(17) All Greater Sudbury Transit Employees should be required to undergo sensitivity training to encourage ridership and ensure that using Transit is a pleasant experience for all socio-economic and age groups.

Numerous low-income focus group participants stated that they were treated with a lack of respect by select transit operators while using Greater Sudbury Transit. There needs to be a standard level of customer service throughout all municipal services regardless of socioeconomic class, age, ability or gender.

6.6 Future Considerations and Potential Initiatives

(1) Consider raising the municipal parking rates to generate funds to support capital and operating costs of transit, walking and cycling facilities.

As seen in Figure 20, municipal parking fees have not increased over the last ten years while transit fares have increased 25%. Data was not available prior to 2001 (year of amalgamation), but in speaking to city officials it was stated that parking fees have not likely been increased in over 20 years. Daily municipal parking fees are currently lower than the Sudbury Regional Hospital, Laurentian University and Cambrian College.

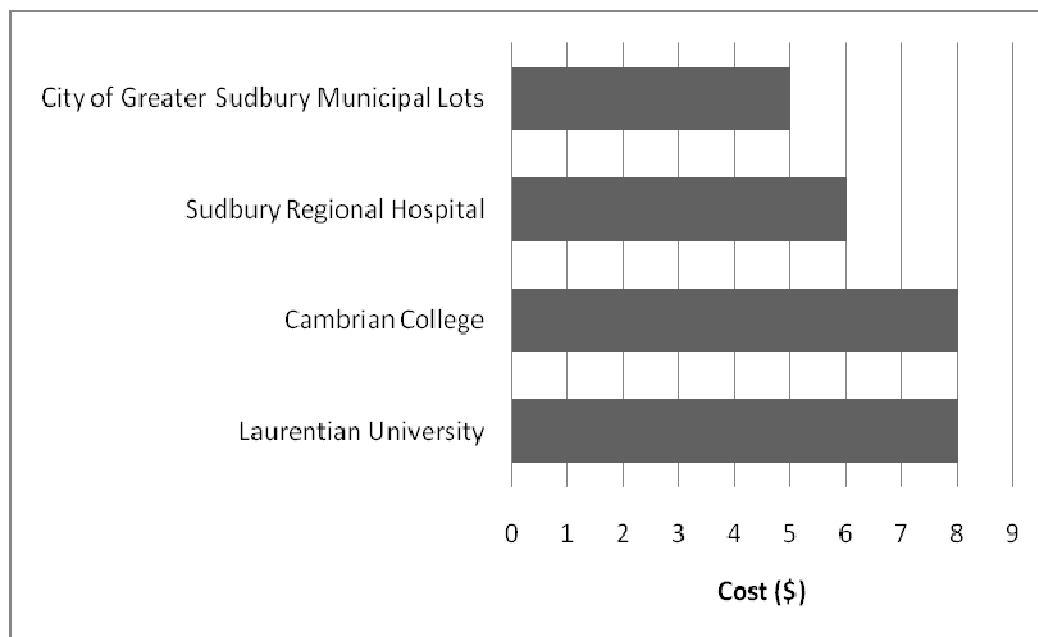


Figure 19. Daily maximum parking rates at major activity and employment centres in the City of Greater Sudbury (2010)

Moderately increasing municipal parking fees would also serve to motivate the public to choose other modes of transportation.

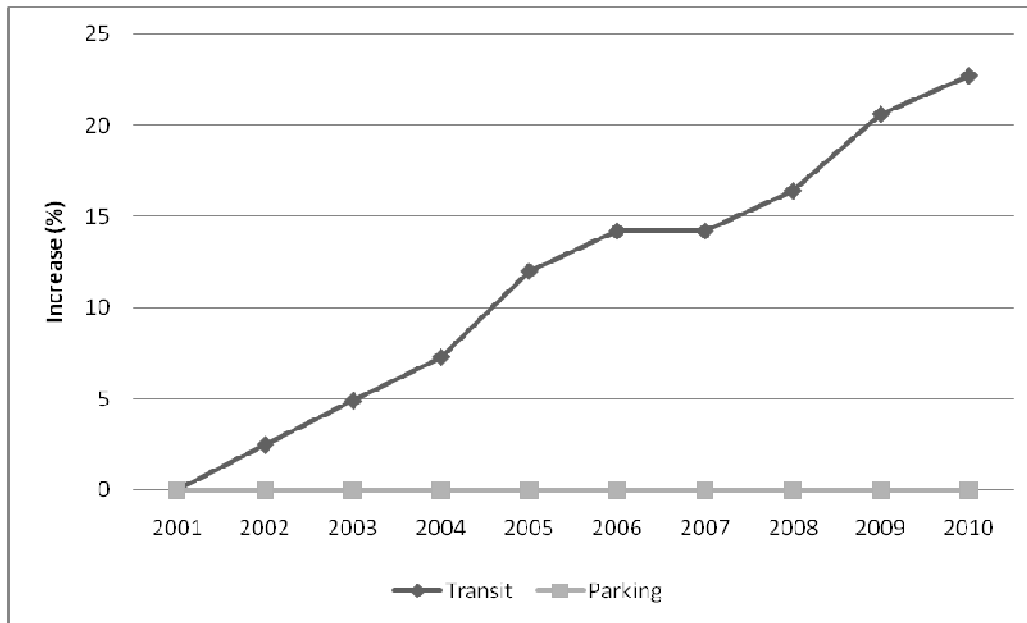


Figure 20. Transit fare and municipal meter parking rates increases in the City of Greater Sudbury since 2001.

(2) The development of an Express Bus Route travelling via Municipal Road 80 and only stopping at major Hubs would benefit individuals who frequent destinations along this main corridor.

Trails for Active Transportation: City of Greater Sudbury recommends that the Greater Sudbury "introduce fast and frequent bus service, possibly an express route or bus rapid transit, running from the Four Corners shopping centre in the south, through downtown, north to the retail district in Val Therese" (2009).

Suggested Stops:

- Hanmer Valley Shopping Centre
- Valley East Mall
- Taxation Centre (Notre Dame at LaSalle)
- Downtown Transit Terminal
- Laurentian Hospital/Science North (Paris at Ramsey Lake Road)
- Four Corners



(3) Examine the feasibility of allowing two-hour transfers at the Downtown Transit Terminal.

Two-hour Downtown transfers benefits:

- Increased foot traffic in the downtown area.
- Increased ridership during non-peak times.
- Offset downtown business concerns regarding increased parking fees and reduced on-street parking.

Currently the practice of allotting a predetermined amount of transit transfer time is practised in numerous other Ontario jurisdictions.

Ask for a Transfer When You Board

The transfer allows you to board a connecting Mississauga Transit service without paying an additional fare. The transfer will also be accepted by Oakville Transit and Brampton Transit at locations where these services connect with Mississauga Transit service.

Here's how transfers work:

- The transfer expires two hours from the start time of the route, not the time when you boarded the bus and received the transfer.
- You must ask for a transfer when you pay your fare - they won't be issued at any other time.
- Show your transfer to the driver each time you board the bus to confirm that the transfer is still valid, and keep it with you as you travel. Once the transfer has expired, you will have to pay an additional fare.
- If you want to transfer again on the connecting transit service, you must obtain a transfer when you board a Brampton or Oakville Transit bus.

Figure 21. Mississauga Transfer Policy 2010

(4) Create a vibrant, inviting, user-friendly Downtown Transit Terminal.

There is an opportunity for community partnerships to revitalize the Terminal through collaboration with community art projects. The Green Stairs project on St. Anne's Road is an example of community groups coming together to reclaim and beautify an area which was once perceived as dangerous and unpleasant.

(5) Explore the potential to develop Mobility Hubs at the Four Corners, New Sudbury and in Valley East, where active modes of transportation could be complementary to transit use.

In order for the City of Greater Sudbury to operate a coordinated and integrated transportation system, it will need to include a number of focal points that will help connect the entire transportation network together. A **mobility hub** is a facility which would offer support to all modes of transportation, including walking, cycling, transit and automobiles with a focus on linking various modes. In order for mobility hubs to be successful, they should be located in areas where a significant number of individuals live and work. They must also be centres of activity, encompassing numerous amenities (Metrolinx Green Paper # 2, 2008).

(6) Examine the potential for public-private partnerships with private bus companies in order to offset the need for transit to service rural communities where ridership is extremely low and associated costs are high.

Currently Food Basics in New Sudbury provides a free shuttle bus service for seniors residing in the Downtown core. This type of service could be replicated in the outlying areas of Greater Sudbury in order to provide improved mobility and access for those individuals without automobiles. For example, a major retail centre in Chelmsford could cover the cost of providing a shuttle bus between Onaping, Levack and Dowling and their retail centre. A public-private partnership could be arranged for other communities as well.

(7) Greater Sudbury Transit should examine the potential to form partnerships with major employment centres, including the City, Sudbury Regional Hospital and the Taxation Center to provide incentives for employees to purchase monthly Transit passes.

The Vancouver Film School in British Columbia has an employer transit pass program available to all its full-time salaried employees (Appendix H – Vancouver Film School Employee Transit Pass Program). The program provides employees with personalized annual transit passes through payroll deductions. The savings of the program is an approximate 15% discount over the cost of purchasing standard monthly passes (this is a 15% savings over the Public Transit Tax Credit).

- In order to ease an individual's concern regarding how to handle emergencies during work hours without access to vehicle, the employer could provide a small fund for taxis.

A recent study conducted by Lachapelle and Frank (2009) concluded that having access to and using an employer-sponsored transit pass was associated with individuals meeting the basic physical activity recommendations of thirty minutes of moderate activity per day, five days a week.

Making transit incentives more broadly available may increase the proportion of individuals meeting the physical activity recommendation. This benefit will likely be appealing to policy makers because they can be achieved within shorter time frames than structural changes required to influence travel behaviour through the built environment (Lachapelle & Frank, 2009).

(8) Examine the possibility of providing Family Day Passes on Saturdays, Sundays and holidays.

The Toronto Transit Commission currently offers a Day Pass which can be used by a maximum of one adult (age 20 and over) and five Youths (age 19 and under) or two Adults and four Youths or two Adults. The purpose of the pass is to encourage families to use public transit as a means of transportation. There must be at least one Adult accompanying the youths at all times while using the pass. The TTC Day Pass is good for unlimited travel on all regular TTC services.

This type of day pass would be particularly beneficial to low income families and as a means to getting to destinations together such as the park, a grocery store or shopping facility. A day pass would increase the mobility of low income families by providing an affordable way to take the transit, where it was otherwise financially inaccessible should the family have to pay individual fares.



TRANSIT DAY PASS FOR CITY VISITORS

A \$5 Day Pass is available for visitors to Kingston. This pass gives one adult and two children (under 18) unlimited bus rides, and is available at City Hall, 216 Ontario St., or at the Tourism Information Office in Confederation Park.

NEW MAY 5, 2007
**WEEKEND FAMILY
ONE DAY**

**DRIVING
AHEAD**

St. Catharines Transit

\$6.

BUS PASS
Valid ONLY Saturday, Sunday or on any Holiday service schedules.
Get your pass from your bus operator, Downtown Terminal or Pen Centre customer service.
Shopping, Movies, etc ...

- Unlimited travel for the day.
- For up to 2 adults and 2 children.
- To be valid, requires 1 adult and 1 child. Put ticket stub side of pass along with \$6 in the fare box.
- For each additional ride that day, show your driver and retain the left side of pass to validate.
- Pass has no cash value.

\$AVING\$ ALL DAY
5 PEOPLE for 6 bucks

FOR ALL YOUR TRANSIT INFORMATION
www.yourbus.com — 905-687-5555

7.0 The Built Environment: We Are Where We Live

7.1 Objective: To develop a "City of Neighbourhoods"

The built environment is defined by urban design, land use and the transportation system, and encompasses patterns of human activity within the physical environment (Handy *et al.* 2002). Specifically, the built environment consists of buildings, products, spaces and infrastructure that is created and modified by people. These range in scale from personal shelter to neighbourhoods to large-scale civic surroundings.

To support the health and well-being of the citizens of Greater Sudbury, proactive planning and design should develop conditions that make streets, neighbourhoods and whole communities safe, aesthetically pleasing, active and inclusive. An increasing body of evidence suggests that the built environment and physical design of where people live and work affects their overall travel choices and how much they choose to walk or bike for utilitarian purposes (Sallis 2004). Street designs which encompass improved pedestrian and cycling infrastructure are connected with higher levels of walking, cycling and public transit usage and decreased levels of personal vehicle usage (PBQD *et al.* 1993, Greenwald & Boarnet 2001, Ewing & Greene 2003).

In addition to having an effect on transportation, the built environment is directly related to levels of physical activity, nutrition and obesity in a community, as well as air pollution exposure and other associated health concerns (Lawrence Frank & Co, Inc.2008). Creating supportive environments can enhance physical well-being and quality of life, foster social interactions and enable people to conduct their daily lives in sustainable, healthy ways (Federal/Provincial/Territorial Ministers Responsible for seniors, Sept. 2006).

A number of studies in the United States and Canada have shown that people who live in moderate to high density areas and in more walkable neighbourhoods make more trips on foot or by bicycle, spend less time driving, are more likely to meet recommended levels of physical activity. People living in more walkable neighbourhoods are less likely to be overweight or obese than those living in rural areas or low density areas with a lack of shops, services and other amenities close by. (The Built Environment, Physical Activity, Heart Disease and Stroke, 2010)

The key elements of pedestrian friendly built environments include the following: medium density, low-rise development; mixed use development; continuous, well maintained sidewalks; and street-oriented buildings.

7.2 Challenges

Streets and Sidewalks

(i) The City of Greater Sudbury does not have a Master Plan for Street Design that incorporates all users of the streets.

Design for roads, crossings and new developments should use active transportation and engineering best practice approaches that increase safety for non-motorized road users and reduce traffic speeds without the need for enforcement (Health Community Design, Policy Statement for Official Plans 2010)

(ii) The City of Greater Sudbury suffers from Urban Sprawl. Geographically, the City of Greater Sudbury is the largest city in Ontario and the seventh largest municipality in Canada, but it ranks 26th in Canada by population.

(iii) Many areas of the city have incomplete sidewalk networks or lack sidewalks altogether.

(iv) The current focus of road development is on moving cars, not people and goods.

(v) Motorized traffic traveling at high speeds in Greater Sudbury is hazardous to all user groups of the road.

Commercial & Retail Development

(vi) New developments and big box stores tend to be set back from the street behind massive parking lots. This arrangement makes it difficult for pedestrians to navigate these areas, even though developments are within walking distance of each other.

- Expansive parking lots create the perception that destinations are further away than they actually are.

(vii) Many retail outlets have insufficient cycling and pedestrian infrastructure connecting the main road to the buildings.

Residential Development

(viii) Many new housing developments remove all large trees prior to construction, replacing them with smaller trees which do not provide the same quality environment.

(ix) New residential developments often discourage walking and increase distances to common destinations.

7.3 Current Initiatives

- 1) The City of Greater Sudbury Green Spaces Advisory Panel was formed in 2009 to provide recommendations related to the establishment of a Parks and Open Space Classification System for the City and a method to rank and evaluate new potential park acquisitions and existing City owned Green Space.
- 2) Downtown Streetscape Project has been examining ways to further improve the Downtown. The Downtown Sudbury Streetscape Project Phase II was prepared in 2008 and is aimed at growing the vitality of the Downtown by enhancing its image, and attracting people and investment.
- 3) Traffic Calming Pilot Project: The City initiated a study to develop a comprehensive traffic calming policy, including a process for identifying and prioritizing traffic concerns, and the subsequent implementation of appropriate corrective measures. The final product of this study will be the development of a detailed traffic calming policy. A key component of this study has been a pilot traffic calming project for the Southview Drive/Bouchard Street corridor between Regent Street and Janmar Court.

7.4 Recommendations

7.4.1 Policy Development

(1) Develop a City of Greater Sudbury Master Plan for Street Design to ensure the safety and security of all transportation system users. Incorporate this policy into the Official Plan Review process (Appendix I: NYC Street Design Manual)

Road design affects the physical form and walkability of neighbourhoods as well as the placement, viability and safety of active transportation infrastructure. Road design influences the behaviour of all transportation users, affecting the safety of everyone within the transportation network (Health Community Design, Policy Statement for Official Plans 2010).

Streets, boulevards and sidewalks should be designed to increase safety and attractiveness while balancing the needs of pedestrians, cyclists and motorists. Streets are the focus of the public life of a city, and walkable streets form the backbone of neighbourhoods that are friendly, interactive, safe, and secure. A Master Plan for Street Design which incorporates planning and design principals will contribute to a consistent level of quality and functionality for streets in the City of Greater Sudbury. Walkable, bike-friendly, transit-oriented neighbourhoods can eliminate the need for many non-essential motorized trips.

Improving the aesthetics of our surroundings will encourage individuals to choose walking or cycling more frequently. Thus, a Master Plan for Street Design must include streetscaping initiatives.

Street-level tree planting and the quality and placement of street furnishings such as decorative streetlights, benches, trash receptacles, bollards and bike racks should be taken into account. All of these elements combine to create a street environment that contributes to an improved quality of life for residents.

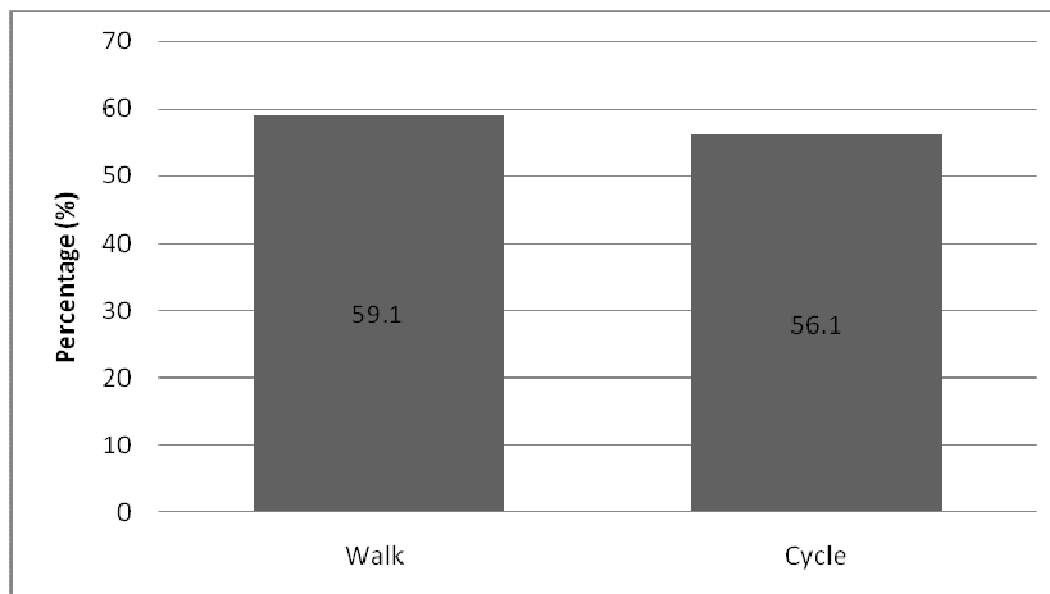


Figure 22. Proportion of individuals who cited "More pleasant routes (i.e. More green space, shaded areas and benches)" as an incentive to choose to either walk or cycle more often

In Ontario, both London and Ottawa are in the preliminary phases of developing and implementing a standard for street design.

In addition to a consistent quality of design and aesthetic appeal for the City's streets, other aspects of design should be considered. The New York Street Design Manual (2009) outlines a variety of goals which contribute to a comprehensive street design policy:

Goals of a Street Design Policy:

- 1) **Design for Safety:** Move people and goods safely; create a built environment that fosters feelings of personal safety and security.
- 2) **Design for Access and Mobility:** Accommodate all street users, giving priority to the most energy - and space - efficient modes.
- 3) **Design for Context:** Respond to neighbourhood character
- 4) **Design for Livability:** Create a vibrant public realm with high-quality public spaces that is inclusive.
- 5) **Design for Sustainability:** Contribute to a healthier and more sustainable environment
- 6) **Design for Visual Excellence:** Create coherent and harmonious streetscapes
- 7) **Design for Cost-Effectiveness:** Provide the greatest possible value to the public

The New York City Street Design Manual is available at:
<http://www.nyc.gov/html/dot/html/about/streetdesignmanual.shtml>

"Community streets are public right-of-ways, which unite neighbourhoods, provide access for motorists and non-motorists, and promote neighbourhood identity, health, comfort, and safety (Moorish & Brown 2000)

(b) Develop and incorporate a Complete Streets Policy into the Master Plan for Street Design

The primary purpose of a complete streets policy is to change the decision-making and design processes so that all users are routinely considered during the planning, designing, building and operating of all roadways; the focus is on policy and institutional changes. Adopting a complete streets policy as part of a comprehensive Master Plan for Street Design will ensure that all new and refurbished developments will be designed as safe, convenient and comfortable for every user, regardless of transportation mode, physical ability or age.

Communities stand to gain many benefits by designing streets with all user groups in mind. These benefits include but are not limited to safety and social benefits gained by lowering traffic speeds; expanded mobility options; improved air quality; increased opportunities for physical fitness; and the design of more attractive communities (Transport Canada March 2009). Additionally, communities which have adopted complete streets policies have reaped significant savings. For example, Portland, Oregon, the leader in innovative pedestrian and cycling infrastructure design and implementation, has recorded savings of \$2.5 billion in direct (fuel) and indirect (time) costs (Transport Canada March 2009).

No Canadian community has yet adopted a specific Complete Streets policy. The City of Greater Sudbury could be the first Canadian community to do so.

(2) At the request of the local City Councillor or Community Action Network conduct Crime Prevention Through Environmental Design (CPTED) Audits in existing areas of concern, in order to ensure that the safety and security of individuals are maintained.

(3) As part of the Official Plan Review, encourage and permit the creation of mixed-use neighbourhoods and buildings (i.e., residential, commercial, institutional).

Mixed use development is the practice of bringing destinations closer to where people live. Mixed use developments permit more than one type of building (i.e., residential, commercial, institutional) in a given area. Currently, much of the existing zoning in the City of Greater Sudbury is based on the principle of separation of land uses, making it difficult in most cases for residents to walk or cycle from their homes to destinations such as work, school or shopping.

Among the commonly cited reasons for encouraging this type of mixed use development are the following: economics; new environmental legislation; changing demographics; and political pressure to reduce fuel consumption (Frank & Pivo, 1996). With the rising costs of owning a vehicle and maintaining road infrastructure it is no longer feasible to provide motor vehicles with sole access to destinations in urban areas.

Neighbourhoods should be designed so that basic services and facilities are located within reasonable walking distances that will encourage individuals to use active means of transportation on a regular basis. A study conducted by Cervero and Radisch (1996) determined that residents in a community featuring compact development and mixed land uses had higher rates of walking or cycling trips to and from transit, and were approximately five times more likely to walk or bike to a non-work destination than residents in a community which had automobile-oriented development and poorly connected streets.

Mixing land uses in various neighbourhoods—as opposed to the segregation of services—can also reduce the need for commuting. A recent study determined that the amount of time a person spends driving has a greater impact on whether that person is obese than other factors such as income, education, gender or ethnicity (Frank *et al.* 2004). Mixed use development will also make a broader range of services available, improving accessibility for neighbourhood residents including those without access to vehicles. As a consequence these locations are more likely to become places for walking and cycling, subsequently contributing to a healthier community (Pressman, 1988).

According to Leyden (2003), pedestrian-oriented, mixed-use neighbourhoods are more likely to encourage social capital than are car-dependent, single-use neighbourhoods. The resulting developments tend to be more stable neighbourhoods with a closely knit identity, greater public safety and a stronger sense of civic pride (Pressman, 1988).

The built environment plays an important role in terms of our physical health. An American study suggests that communities where sprawl is the common development pattern results in as much as a 2.9 kg difference in the average body weight of residents versus individuals who live in a community which is compactly designed (Ewing *et al.* 2003).

(4) As part of the Official Plan Review, encourage mixed-use developments to form clusters in neighbourhood centres.

*"Small-scale commercial uses that are intended to serve the convenience needs of local residents are permitted in all Living Areas by rezoning. Such uses are intended to be **isolated** rather than forming a group or cluster that could potentially change the residential character of an area."*

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 25)

The City of Greater Sudbury Official Plan also states that the City wishes to promote the concept of a "City of Neighbourhoods, with active neighbourhood centres and problem solving at the local level".

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 184)

(5) As part of the Official Plan Review prohibit the installation of drive-through infrastructure at new developments, when adjacent to high pedestrian traffic intersections and/or transit stops.

The City of Greater Sudbury has a significant number of drive-throughs which have been constructed near major intersections. More could be done to improve both their function and their appearance and safety. Drive-throughs situated in these locations result in traffic congestion at the intersection which in turn impedes pedestrian movement.

The following drive-through guidelines have been taken from the Commercial Urban Design Policy Review (London, ON 2007) and could be considered when determining the positioning of a new drive-through commercial development:

- The number of existing drive-through facilities should be determined and limits should be placed on the growth of additional drive-through establishments;
- Queuing lanes should not be permitted adjacent to key intersections, especially not adjacent to transit stops;
- Main pedestrian entrances should be prominently indicated through wayfinding signage, architectural treatments, including distinctive pavement and pavement markings;
- Queuing lanes should not be permitted to bisect pedestrian access routes to the main entrance;
- Architects should be careful to avoid creating blind corners due to the tightness of vehicle queuing lanes to the building;
- Queuing lanes should be well screened by landscaping and/or attractive fencing;
- Amplified speaker boxes should not be located opposite residential or office areas.

(6) Develop a Sidewalk Priority Index in order to ensure that sidewalks are installed on both sides of major arterial roads where the index deems necessary.

(7) As part of the Official Plan Review ensure that connections between neighbourhoods and adjacent, commercial, education and employment centres, such as pedestrian walkways and bicycle trails be identified and secured during the development approval process. Provision for these connections shall be included in the design of the development in order to ensure connectivity for pedestrians and cyclists.

(8) Develop a Public Plaza program in the City of Greater Sudbury (i.e Brownfield development into parks and parkettes; Tom Davies Square into an inviting and usable public space).

A public plaza is a community amenity that serves a variety of users including building tenants and visitors and members of the public (National Institute of Building Sciences - Whole Building Design Guide). This public space may function as a gathering place, a home for public art and a setting for recreation and relaxation. Plazas are a beneficial feature of any lively streetscape.

Focus group input determined that improved access to green space and other more pleasant surroundings would encourage more people to choose active modes of transportation, including both walking and cycling. Creating public plazas is also a proven method of beautifying an area, as evidenced by the success of other cities who have implemented this idea.

Access to green space has been proven to provide benefits to both physical and mental health in individuals. Green spaces must be designed in a way that promotes empowerment for groups including those individuals who are low income by potentially engaging them in the design process. Furthermore, potential psychological and mental health benefits from exposure to nature are not limited to exposure in the countryside only; within urban and semi-urban settings, access to green spaces can be beneficial (Nature and Psychological Well-being 2003). There is also increasing evidence that access to high quality green space can produce measurable improvements to stress levels in a relatively short amount of time (Thrift, 2005).

7.4.2 Infrastructure

(9) Where pedestrian and cycling infrastructure is present, appropriate complimentary traffic calming measures should be implemented.

On residential and local streets, traffic calming measures can be sufficient to make walking and cycling safe and comfortable without additional infrastructure.

Success of road design depends largely on how safe the roads are for different users. In most instances the definition of road users has overlooked or disregarded pedestrians and cyclists. Roads built in the past few decades tend to be built for speed, ensuring maximum convenience to drivers but intimidating those who use sustainable transportation (pedestrians and cyclists).

Traffic calming is one way of reclaiming the roads for more equitable use by different users (Sarkar *et al.* 1997). Traffic calming consists of physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users (Institute of Transportation Engineers Definition 1997). Objectives of traffic calming include increasing quality of life; incorporating the preferences and requirements of people using the area along the street or at the intersection; creating safe and attractive streets; helping to reduce the negative effects of motor vehicles on the environment; and promoting pedestrian, cycling and transit use.

Traffic calming measures come in numerous forms, and range in complexity from simple speed bumps to raised intersections. The following table has been created using information available on the Institute of Transportation Engineers website (2010):

Traffic Calming Measure	Examples
Vertical changes	<ul style="list-style-type: none"> • speed humps • speed tables • raised intersections • raised crosswalks
Lateral changes	<ul style="list-style-type: none"> • chicanes • off-set intersections • lateral shifts • curb extensions • small corner radii • traffic circles
Constrictions	<ul style="list-style-type: none"> • narrowing • pinch points • islands • medians

By implementing traffic calming strategies in areas with high pedestrian and/or cyclist activity, the volume and speed of motorized traffic can be reduced to allow cyclists to share the road with vehicles and to allow pedestrians the ability to cross or walk adjacent to the roads more safely. Quieter streets and the resultant increased ease of crossing also enhance the pedestrian environment. Additionally, parents are more likely to allow their children to walk or ride a bike in their neighbourhoods if the streets are made safer through the implementation of calming measures (Oregon Bicycle and Pedestrian Plan 1995).

(10) Implement section of the Downtown Sudbury Streetscape Project Phase II to upgrade the connection between Bell Park and the Downtown core via Elgin Street to improve access between Downtown core and Bell Park.

The overwhelming majority of individuals consulted through the public input process identified Bell Park as the most pleasant place to walk or cycle in the City of Greater Sudbury. The city core is within walking distance of Bell Park. Establishing a non-motorized link between these two areas would assist in changing the perception of downtown as distant from Bell Park. By upgrading the connection between the Nelson Street Bridge and Minto Street via Elgin Street, progress can be made towards transforming individual and collective attitudes regarding the Downtown Core. This is particularly important for individuals whose only mode of transportation may be walking.

(11) Ensure that all new developments are connected to existing developments and destinations for easy, efficient access for cyclists and pedestrians

(12) Implement the Crime Prevention Through Environmental Design (CPTED) lens as a planning tool as part of the planning approval process for such things as, but not limited to, site plans, subdivisions and re-zoning applications to ensure that the safety and security of individuals are considered.

7.4.3 Public Awareness and Education

(13) Educate the public as to how the "Built Environment" and where they choose to live affects their travel choices, physical health and lifestyle.

The Canada Mortgage and Housing Corporation have published a pamphlet regarding how to choose a neighbourhood with sustainable features. By sustainable features, they speak of a neighbourhood which meets your needs while protecting the environment and leaving an affordable legacy.

The CMHC defines a sustainable neighbourhood as one which offers homes that are located near schools, recreation opportunities, work and other destinations. In addition to having the actual destinations, these neighbourhoods are pleasant, safe and convenient for walking and cycling and conducive to transit use. Residents of these neighbourhoods benefit from a well designed built environment which contributes to improved health and reduced travel costs.

7.5 Future Considerations and Potential Initiatives

(1) Systematically reduce the amount of on street parking in the downtown area to create a more pedestrian friendly area.

Copenhagen, Denmark has introduced a plan to reduce the number of on-street parking spaces in the city's core. The plan calls for the removal of 2-3% of on-street parking spaces per year, in order to facilitate the development of pedestrian infrastructure. By reducing on-street parking, social capital will be enhanced. People who drive everywhere are less likely to interact with other areas of the City other than where they are expressly going. They tend to drive by rather than interact.

In Greater Sudbury the perception among downtown merchants is that the availability of on-street parking is necessary to encourage shoppers to frequent their business. A study completed in Bloor West Village in Toronto discounted this notion. Similar to Greater Sudbury, the common public perception is that on-street parking is vital to business along Toronto's major arterials such as the Bloor-Danforth corridor, and that bike lanes and other infrastructure for active transportation will hurt commercial activity if introduced at the expense of parking (Clean Air Partnership 2010). This view is often used as a justification for avoiding changes to streets that otherwise could provide greater space, comfort and increased safety for pedestrians and cyclists.

Clean Air Partnership determined that that bike lanes and other infrastructure for active transportation are benefits for to local commerce, and in consequence, support for active transportation infrastructure is high among both merchants and city residents (2010). Additionally, the partnership found that people who arrive by transit, foot, and bicycle visit more often and report spending more money than those who drive.

(2) The courtyard at Tom Davies Square could be transformed into a vibrant public space through the creation of a functional green space and public plaza.

Transforming the courtyard at Tom Davies Square could increase the functionality of the space, creating the potential for the Square to become a model for developing other lively pedestrian plazas in the City of Greater Sudbury. Creating a well-designed green space that can accommodate a variety of users can be beneficial on multiple levels. By making the space more inviting, many individuals who work at Tom Davies Square may be encouraged to enjoy their lunch outside, or even to schedule meetings in the courtyard. Members of the community at large might also be more likely to use the space if it were made more pleasant.

Because of its central location, there is great potential for a public-private partnership with the surrounding landowners. For example, Dalron, a local building contracting company, is currently in the beginning stages of developing condominiums adjacent to Tom Davies Square. Prospective residents of the new building may be interested in having access to this green space. In addition, both the Bell building and the Best Western Hotel are on the same block and may also see the added value in having green space behind the buildings, particularly the hotel.

Connection with nature and access to green space has been found especially important for mental health in addition to alleviating stress and for relaxation (Abelsohn 2005). Research also demonstrates that having accessible green space in the community can also play a role in warding off mental illnesses in the first place.

"If City Council cared about the city being pedestrian-friendly, they would first improve 'their' yard around Tom Davies Square and use it to showcase what they believe in."

CGS Sustainable Mobility Plan Public Input Session Attendee, 2010

"It is the policy of this Plan to preserve those aspects of the Downtown that contribute to the image, character and quality of life in the City, including natural features, landmarks, design attributes, heritage resources, linkages to existing trails, pedestrian walkways and other desirable elements of the built environment."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 37)

"Programs to beautify the Downtown are required to improve the quality of the built form and support its role as a centre of retail, arts and culture, government and business services".

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 162)

"Infrastructure expenditures will also be directed towards improving the aesthetic appeal of the City through urban design programs including streetscape improvements."

City of Greater Sudbury Official Plan September 2008 Consolidation (p. 184)

(3) Support neighbourhoods in creating and revitalizing public space.

A small public space can make a big difference in a neighbourhood, creating sense of place, and providing space and opportunity for neighbours to meet and make connections (building social capital). Opportunities for interaction between neighbourhoods are as equally as important as the opportunity to build rapport with individuals in your own neighbourhood.

Some municipalities have a Department of Neighbourhoods to facilitate these types of projects (e.g. <http://www.cityofseattle.net/neighborhoods/>)

(4) Provide incentives to developers to leave many of the larger, older trees in place and to build around them, leaving the character of the area intact, as opposed to removing them and replacing the existing trees with smaller ones.

Mature trees add to the natural character and aesthetic quality of the pedestrian and neighbourhood environments. Removing large trees decreases the amount of shade in a community and may also negatively impact the general perception of the area.

Several cities in Ontario have enacted by-laws to protect mature trees from being removed during development:

- Richmond Hill requires a permit for the removal of trees which are 20 cm in diameter or more as measured at 1.4 m above ground level ("breast height").
- The City of Toronto has a similar by-law requiring a permit for the removal of trees over 30 cm in diameter at breast height.
- The City of Guelph requires a special permit for the removal of trees with a minimum height of 4.5 m.
- Both Mississauga and Aurora require permits for the removal of five or more trees.

(5) Implement a "Road Diet" on Elm Street thereby removing the outside lanes and replacing them with Class 1 or Class 2 bicycle infrastructure, creating a complete street.

A "road diet" is a traffic calming measure which is used to narrow a roadway by reducing the number of vehicular travel lanes. A key benefit of road diets is lower vehicular speeds, and improved pedestrian and cyclist safety. Other benefits of road diets include promoting better land use, greater driving attentiveness, and cycling through the addition of bicycle lanes.

Reallocating the road space on Elm Street to transit, cycling lanes, or increased sidewalk space can help achieve equity and efficiency objectives by improving mobility options for non-motorists and encouraging travelers to shift from automobile to more space-efficient modes such as transit, ridesharing, cycling and walking, particularly since automobile parking can be provided off-street or in nearby municipal lots (Road Space Reallocation - Victoria Transport Policy Institute 2010).



The City of Greater Sudbury's engineering and planning departments have been exploring the possibility of rerouting truck traffic from the downtown section of Elm Street to an alternate route, making a road diet for Elm Street a viable.

Figure 23. New road diet demonstrating the conversion of a formerly 4-lane thoroughfare to a complete street, with sidewalks, bicycle lanes and a pedestrian refuge island.

The City of Toronto has proposed a major expansion of its bike lane program this year, including University Avenue and other major streets. Under the plan, two lanes of University Avenue would be removed and replaced by protected bike lanes in a pilot project. The plan also recommends new bike lanes for nine other major roadways (Moloney 2010).

8.0 Next Steps

(1) Formally forward this document and its recommendations to the Healthy Community Cabinet and subsequently to City Council for their consideration, as it was commissioned by the Healthy Community Cabinet.

(2) Develop a Sustainable Mobility Advisory Panel comprised of representation from appropriate stakeholder groups to provide a holistic approach to sustainable and active transportation initiatives in the City of Greater Sudbury.

- The purpose of this panel would be to advocate and oversee the actions related to the Sustainable Mobility Plan for the next term of City Council.
- The Panel should include but not be limited to the following groups:
 - Community representations (formerly Bicycle Advisory Panel & Walkability Task Group)
 - Community experts (walking, cycling and transit users, low income community, seniors, children and youth)
 - City staff (Transit, Community Development, Planning, Roads and Engineering, Parks, Leisure Services, Tourism, Police Services)
- The Panel should report progress to City Council on an annual basis.

(3) It is recommended to City Council that a staff position be created to assist the Sustainable Mobility Advisory Panel in their functions of advocating and overseeing the advancement of the Sustainable Mobility Plan for the next term of Council and that this matter be brought forward during 2011 budget deliberations.

- This individual would be responsible for all inquiries and issues related to sustainable mobility and active transportation in the City of Greater Sudbury.

9.0 Summary of Recommendations

WALKING

		BUDGET IMPLICATIONS (Approx. Costs)	TIMELINES	KEY WORD
Policy				
Give equitable consideration to pedestrian needs and infrastructure in the Transportation Section of the Official Plan for the City of Greater Sudbury.				
(1)	As part of the next Official Plan review process, give equitable consideration to the needs of pedestrians in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for pedestrians and other forms of transportation improvements.	N/A	2013	Official Plan
(2)	<p>Review existing practices to develop a Priority Index System to help set priorities for pedestrian infrastructure improvements, installations, traffic calming and maintenance. Adopt this Index System into the Official Plan through the review process (Appendix B – City of Victoria Sidewalk Priority Index).</p> <p>a) Develop a Sidewalk Priority Index to identify gaps in the sidewalk and pathway networks, in order to set priorities for construction, improvements and maintenance.</p>	Low (\$5000: In House)	Yr 1	Priority Index

	<p>b) Develop a Pedestrian Crossing Priority Index to identify gaps in crosswalk infrastructure and to set priorities for installation, improvements and maintenance.</p> <p>c) Using the Priority Index System for pedestrians, determine where traffic calming measures are required on residential and local streets in high pedestrian traffic areas</p>			
(3)	Follow the Official Plan with respect to both development and site plan requirements prior to approvals in all cases (i.e. landscaping, lighting, sidewalks, paving, public art, etc.)	N/A	Yr 1	Official Plan
(4)	As part of the Official Plan Review process, pedestrian walkways and bicycle trails between neighbourhoods and adjacent commercial, education and employment centers would be identified and secured during the development approval process. Provision for these connections shall be included in the design of the development in order to ensure connectivity for pedestrians and cyclists.	Low	2013	Official Plan
(5)	At the request of the local City Councillor or Community Action Network to the Traffic Committee, conduct pedestrian traffic studies to identify where there are significant mid-block crossings are occurring.	Low	Yr 1	Pedestrian Crossings
(6)	Consult with Rainbow Routes Association where pedestrian connections are required to encourage trail linkages to new and existing developments.	N/A	Yr 1	Non-Motorized Connections

Infrastructure				
(7)	Using the Sidewalk Priority Index ensure that identified gaps in the sidewalk and pathway networks are constructed, improved and maintained in all seasons.	High (\$1.4 million per year for 4 years)	Yr 2-5	Non-Motorized Connections
(8)	Using the Pedestrian Crossing Priority Index ensure that crosswalk infrastructure is installed, improved and maintained where gaps have been identified.	Medium (\$150,000 per year for 4 years)	Yr 2-5	Pedestrian Crossings
(9)	Install pedestrian refuge islands or medians where significant mid-block crossings are identified through Pedestrian Traffic Studies.	Medium (\$50,000 per year for 4 years)	Yr 1	Pedestrian Crossings
(10)	Develop a plan for the expansion of the countdown crosswalk signals to be installed at every traffic signalized intersection in Greater Sudbury by 2015.	Medium (\$50,000 per year for 4 years)	Yr 2-5	Pedestrian Crossings
(11)	Using the Priority Indexing System ensure that traffic calming measures are implemented on residential and local streets in high pedestrian traffic areas to ensure the safety and security of pedestrians.	Med (\$150,000 per year for 4 years)	Yr 2-5	Traffic Calming
(12)	Ensure infrastructure to improve connectivity between destination points, such as footpaths, are included in new developments.	Low	Yr 1	Non-Motorized Connections
(13)	Work to improve the pedestrian connections in existing neighbourhoods and between existing destination points.	Low	Yr 1	Non-Motorized Connections

(14)	Continue to ensure that traffic signals provide pedestrians with sufficient time per provincial standards to cross major thoroughfares safely, particularly for pedestrians with limited mobility, including those using wheelchairs, scooters and other supportive equipment.	Low	Yr 1	Pedestrian Crossings
(15)	Complete the Junction Creek Waterway Park as an Active Transportation Corridor in Greater Sudbury by 2015.	High	Yr 2-5	Junction Creek Waterway Park
Education				
(16)	Develop and promote education and awareness programs for both pedestrians and motorists.	Low (Potential Partnership with SDHU)	Yr 1	Awareness & Education
(17)	Develop a user-friendly “Transportation” page on the City of Greater Sudbury website to include links to all forms of transportation information.	Low	Yr 1	City Website
(18)	Conduct educational blitzes at high-profile intersections in the City of Greater Sudbury.	Low (Potential Partnership with SDHU & Police Services)	Yr 1	“On the street” education

CYCLING

		BUDGET IMPLICATIONS (Approx. Costs)	TIMELINES	KEY WORD
Policy				
Give equitable consideration to cyclists' needs and infrastructure in the Transportation Section of the Official Plan for the City of Greater Sudbury.				
(1)	As part of the next Official Plan review process, give equitable consideration to the needs of cyclists in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for cyclists and other forms of transportation improvements.	N/A	2013	Official Plan
(2)	Amend the Official Plan (Transportation Schedule) to include a Bicycle Route Plan & Classification System using the draft Bicycle Route Plan and Classifications System developed through public consultation and in conjunction with the Bicycle Advisory Panel for all existing roads as a starting point (Appendices C & D).	Low	Yr 1	Official Plan

(3)	<p>Create a Priority Indexing System for cycling to create a system that will set priorities set for cyclist infrastructure improvements, installations, traffic calming and maintenance. Adopt this Indexing System into the Official Plan Review (Appendix B – City of Victoria Sidewalk Priority Index).</p> <p>a) Using the Priority Indexing System develop an action plan for the implementation of the Bicycle Route network following the Official Plan amendment process. This action plan will include detailed timelines for completion, the anticipated costs and will be in consideration of planned road work.</p> <p>b) Using the Priority Index System for cycling determine where complimentary traffic calming measures are required on residential and local streets in high cyclist traffic areas.</p>	Low	Yr 1	Priority Index
(4)	Incorporate into the Official Plan review appropriate cycling infrastructure on all new road development.	N/A	2013	Official Plan
(5)	Incorporate into the Official Plan Review, the mandatory requirement for commercial, retail and institutional buildings to provide bicycle parking and storage.	N/A	2013	Official Plan

(6)	Adopt the draft Bicycle Parking Zoning By-Law which would require a minimum number of bicycle parking spaces at retail, institutional, employment, educational and residential centers (Appendix E).	N/A	2010 (Done)	By-Law
(7)	Draft and adopt a by-law which prohibits the operation of motor vehicles within designated bicycle lanes or paths.	N/A	Yr 1	By-Law
(8)	Ensure that the practice of incorporating wide, paved shoulders along major arterials connecting outlying communities is continued. These paved shoulders often provide optimal infrastructure for distance “Group A” cyclists.	N/A	Yr 1-5	Bicycle Route Network
Infrastructure				
(9)	Implement the Action Plan developed for the Bicycle Route Network following the Official Plan amendment process.	High (\$700,000 per year for 4 years)	Yr 2-5	Bicycle Route Network
(10)	Pave shoulders along major arterial roads connecting outlying communities to the urban core to provide a safe area for Class A cyclists to commute.	Medium-High (\$100,000 per year for 4 years: Estimated cost of \$30,000 per linear meter)	Yr 2-5	Bicycle Route Network
(11)	Using the Priority Index System for cycling, install complimentary traffic calming measures on residential and local roads to create the safe conditions necessary to encourage individuals to choose cycling.	Medium (See Walking #7)	Yr 2-5	Traffic Calming

(12)	Expand and promote the City of Greater Sudbury Transit “Rack and Roll” program to all transit busses by 2015.	\$35,000 (\$7000 per year for 4 years Potential Private/Public partnership)	Yr 1-5	Supportive Cycling Infrastructure
(13)	Ensure that adequate, accessible and secure bicycle parking facilities are available at all major employment, retail and educational centers, in addition to all city-owned facilities and buildings through the enforcement of the new Bicycle Parking By-Law.	Low (Potential Private/Public partnership)	Yr 1-5	Supportive Cycling Infrastructure
(14)	Complete the Junction Creek Waterway Park as an Active Transportation Corridor in Greater Sudbury by 2015.	High	Yr 2-5	Junction Creek Waterway Park
Education				
(15)	Develop a "Cycling in Greater Sudbury" wayfinding map outlining designated routes and information.	\$10,000 (Potential Private/Public partnership)	Yr 1	Wayfinding
(16)	Develop and promote educational programs for both cyclists and motorists.	Low	Yr 1	Awareness & Education
(17)	Develop a user-friendly “Transportation” page on the city website to include links to all forms of transportation information.	Low	Yr 1	City Website
(18)	Conduct educational blitzes at high-profile intersections in the City of Greater Sudbury.	Low	Yr 1	“On the street” education

TRANSIT

		BUDGET IMPLICATIONS (Approx. Costs)	TIMELINES	KEY WORD
Policy				
Give equitable consideration to transit users' needs and infrastructure in the Transportation Section of the Official Plan for the City of Greater Sudbury.				
(1)	As part of the next Official Plan review process, give equitable consideration to the needs of transit users in the Transportation section of the Official Plan. This could include, among other matters, a set of indices, which would help set priorities for transit users and other forms of transportation improvements.	N/A	2013	Official Plan
(2)	Adopt a new policy which would allow parents to keep children seated and secured within a stroller while riding the Transit.	N/A	Yr 1	Transit Policy
(3)	Ensure that at least one member of the Greater Sudbury Transit Committee be a CGS Transit user.	N/A	Yr 1	Transit Committee
(4)	To potentially improve upon the \$500 per qualified agency municipal transit ticket policy; Sudbury Transit could make public transportation even more accessible to people living on low incomes by adopting a "Matching System" for transit ticket grants to qualified agencies as per the Victoria BC model.	N/A	Yr 1	Transit Policy

	A definition of “qualified agencies” needs to be developed as well as a means to educate the public as to the availability of transit tickets from qualified agencies.			
(5)	Using the Priority Index System developed in Walking and Cycling, give priority for maintenance and snow clearing of transit stops in high traffic pedestrian areas - particularly in areas where there are high densities of seniors, low income individuals, children and youth.	N/A	Yr 2-5	Priority Index
Infrastructure				
(6)	Expand and promote the City of Greater Sudbury Transit “Rack and Roll” program to all transit busses by 2015.	Medium \$35,000 (\$7000 per year for 4 years Potential Private/Public partnership)	Yr 1 -5	Supportive Cycling Infrastructure
(7)	Develop and install a detailed wayfinding scheme for the transit system including mounted schedules and displays at major destinations, hubs and stops.	Medium (Potential Private/Public partnership)	Yr 1 -3	Wayfinding
(8)	Ensure that there is adequate and secure bicycle parking or storage at the transit terminal and other key destinations and stops in order to facilitate the combination of active transportation methods with transit.	Medium (Potential Private/Public partnership)	Yr 1 -5	Supportive Cycling Infrastructure
(9)	Ensure that maintenance and snow clearing of transit stops is a priority for high traffic pedestrian areas where high densities of seniors, low income individuals, children and youth reside.	Low	Yr 2-5	Transit Stops

(10)	Improve access to transit stops through the construction of sidewalks/pathways and pedestrian crossings in areas which have few or no controlled pedestrian crossing signals (i.e. Municipal Road 80).	High	Yr 2 -5	Non-Motorized Connections
(11)	Develop a plan to expand the existing system of bus shelters using GIS priority mapping data to identify larger populations of low income individuals, seniors, children and youth.	Medium (Potential Private/Public partnership)	Yr 1 -3	Transit Stops
(12)	Install an Interac direct payment machine at the Transit Centre Kiosk in the Downtown Terminal.	Low	Yr 1	Transit Stops
Education				
(13)	Promote transit as a healthier transportation choice both for individual and environmental health.	Low	Yr 1	Awareness and Education
(14)	Promote transit as a convenient and affordable transportation choice.	Low	Yr 1	Awareness and Education
(15)	Develop a user-friendly "Transportation" page on the city website to include links to all forms of transportation information.	Low	Yr 1	City Website
(16)	Ensure that all policies related to combining active transportation with public transit are laid out in the Greater Sudbury Rider Guide and Transit website so that the public is aware of these policies.	N/A	Yr 1	Policy
(17)	All Greater Sudbury Transit Employees should be required to undergo sensitivity training to encourage ridership and ensure that using Transit is a pleasant experience for all socio-economic & age groups.	Low (Potential Partnership with Social Planning Council)	Yr 1	Training

BUILT ENVIRONMENT

		BUDGET IMPLICATIONS (Approx. Costs)	TIMELINES	KEY WORD
Policy				
(1)	Develop a City of Greater Sudbury Master Plan for Street Design to ensure the safety and security of all transportation system users. Incorporate this policy into the Official Plan Review process (Appendix I NYC Street Design Manual) a) Develop and incorporate a Complete Streets Policy into the Master Plan for Street Design	Low – Medium (Ottawa is preparing a Street Design Policy in house)	Yr 1	Official Plan
(2)	At the request of the local City Councillor or Community Action Network conduct Crime Prevention Through Environmental Design (CPTED) Audits in existing areas of concern, in order to ensure that the safety and security of individuals are maintained.	N/A	Yr 1	CPTED
(3)	As part of the Official Plan Review, encourage and permit the creation of mixed-use neighbourhoods and buildings (i.e., residential, commercial, institutional).	N/A	Yr 1	Official Plan
(4)	As part of the Official Plan Review, encourage mixed-use developments to form clusters in neighbourhood centres.	N/A	Yr 1	Official Plan

(5)	As part of the Official Plan Review prohibit the installation of drive-through infrastructure at new developments, when adjacent to high pedestrian traffic intersections and/or transit stops.	N/A	Yr 1	Official Plan
(6)	Develop a Sidewalk Priority Index in order to ensure that sidewalks are installed on both sides of major arterial roads where the index deems necessary.	Low	Yr 1	Priority Index
(7)	As part of the Official Plan Review ensure that connections between neighbourhoods and adjacent, commercial, education and employment centres, such as pedestrian walkways and bicycle trails be identified and secured during the development approval process. Provision for these connections shall be included in the design of the development in order to ensure connectivity for pedestrians and cyclists.	N/A	2013	Official Plan
(8)	Develop a Public Plaza program in the City of Greater Sudbury (i.e Brownfield development into parks and parkettes; Tom Davies Square into an inviting and usable public space).	Low	Yr 2	Public Plaza
Infrastructure				
(9)	Where pedestrian and cycling infrastructure is present, appropriate complimentary traffic calming measures should be implemented.	Medium (See Walking #7)	Yr 2 -5	Traffic Calming

(10)	Implement section of the Downtown Sudbury Streetscape Project Phase II to upgrade the connection between Bell Park and the Downtown core via Elgin Street to improve access between Downtown core and Bell Park.	Medium (\$200,000)	Yr 1 -2	Downtown Sudbury Streetscape Project Phase II
(11)	Ensure that all new developments are connected to existing developments and destinations for easy, efficient access for cyclists and pedestrians.	Low	Yr 1	Non-Motorized Connections
(12)	Implement the Crime Prevention Through Environmental Design (CPTED) lens as a planning tool as part of the planning approval process for such things as, but not limited to, site plans, subdivisions and re-zoning applications to ensure that the safety and security of individuals are considered.	N/A	Yr 1	CPTED
Education				
(13)	Educate the public as to how the "Built Environment" and where they choose to live affects their travel choices, physical health and lifestyle.	Low (Potential Partnership with the New School of Architecture)	Yr 1-5	Education & Awareness

10.0 Glossary

8-80 Rule - is a tool for making decisions about our built environment, in particular pedestrian and cycling infrastructure, based on what would be safe for an 8 year old and an 80 year old. If you would allow an 8 and 80 year old to walk or bike on the infrastructure in place then it is safe enough, if you would not allow them to continue, then it is not safe enough and requires modification (www.8-80cities.org).

Accessibility is a general term used to describe the degree to which a product, device, service, or environment is accessible by as many people as possible. When accessibility is discussed, it is in terms of seniors, children, individuals with limited mobility and low income individuals.

Active Transportation - any non-motorized human powered mode of transportation, such as walking or cycling

Bicycle Sharing System (Library, Rentals or Co-operative) - are increasingly popular and diverse. A number of bicycles are made available for shared use by individuals who do not own any of the bicycles. This service may either be provided at no charge (library) or at a minimal fee (rental).

Bike Box - Designated, marked area at a signalized intersection that places bicycles at the front of the queue. Bike boxes increase the visibility of bicyclists and allow them to enter/clear the intersection before motor vehicles.

Boulevard - *as defined by the City of Greater Sudbury bylaw 2010-1 (Traffic and Parking)*: means that part of the highway situated between the roadway and the property lines of the lots abutting the highway and includes a shoulder but does not include a sidewalk.

Built Environment - buildings, products, spaces and infrastructure that is created and modified by people

Group A Cyclists - These cyclists operate their bicycles much like they would motor vehicles. They tend to be current users of arterial and collector streets and are best served by direct access to destinations via the street network. This direct access allows them to operate at maximum speed with fewer delays.

Group B Cyclists - A more common type of cyclist is the casual or basic cyclist who is less confident in his/her ability to operate in traffic without special considerations for bicycles. This type of cyclist requires more comfortable access to destinations. Ideally this access would be along direct routes along lower volume streets or designated bicycle facilities. On arterial routes, bike lanes, paved shoulders or separate bicycle paths may be required, depending on the volume and speed of the particular road.

Jane Jacobs - (May 4, 1916 – April 25, 2006) was an American-born Canadian writer and activist with primary interest in communities and urban planning and decay. She is best known for *The Death and Life of Great American Cities* (1961), a powerful critique of the urban renewal policies of the 1950s in the United States.

Mixed-Use Development - Mixed-use developments incorporate complementary residential, commercial, civic and business uses into a single parcel or development area.

Mobility Hub - They are places of connectivity where different modes of transportation — from walking to high-speed rail — come together seamlessly and where there is an intensive concentration of employment, living, shopping and/or recreation.

Pedestrian Countdown Signal - A pedestrian countdown traffic signal provides a digital display which counts down the number of seconds remaining to complete a safe crossing of an intersection. The countdown begins as soon as the "flashing hand" symbol appears.

Pedestrian Refuge Island - is a small section of pavement or sidewalk, completely surrounded by asphalt or other road materials, where pedestrians can stop before completing a road crossing. It is typically used when a street is very wide, and the pedestrian crossing can be too long for some individuals to cross in one traffic light cycle. It is also often used when no light exists, and pedestrians need safe harbour after managing one direction of traffic, before taking on the next.

Primary Arterial Road - *as defined in the City of Greater Sudbury Official Plan 2008 Consolidation as:*

- A major highway which connects the City with other major centres outside the City and/or interconnecting communities.
- It is also for the long distance person or goods movement travel through the City of between major activity areas within the City.
- Traffic movement is the primary consideration.

Rack and Roll - The Rack and Roll program aims to put bicycle carriers on city Transit busses such that individuals traveling over longer distances from rural areas can transport their bike with them.

Road Diet - A road diet is a technique in transportation planning whereby a road is reduced in number of travel lanes in order to achieve systemic improvements. One of the most common applications of a road diet is to improve safety in the context of two-way streets with 4-lane sections. In this case, two travel lanes in each direction are converted into a 3-lane section with one travel lane in each direction, optional bicycle lanes, and a two-way turn lane in the middle.

Social Capital - the ways and degree to which people interact with their neighbours, the relationships they form within their community and the amount of time they spend engaged in civic endeavours, volunteer work or other community activities

Streetscape - The visual elements of a street, including the road, adjoining buildings, street furniture, trees and open spaces, etc, that combine to form the street's character

Sustainability - meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Thermoplastic - is a polymer that turns to a liquid when heated and freezes to a very glassy state when cooled sufficiently. It is an alternative technology for road markings to traditional paint.

Traffic Calming Device - any horizontal deflection, vertical deflection, obstruction/closure or signage installed on a highway to reduce the impacts of traffic on neighbourhood communities and other public facilities such as parks, school areas, and community centres.

Vehicle - *as defined by the City of Greater Sudbury bylaw 2010-1 (Traffic and Parking)*: includes a motor vehicle, trailer, traction engine, farm tractor, road-building machine, and any vehicle drawn, propelled or driven by any type of power, including muscular power, but does not include a pedestrian, a motorized snow vehicle, or cars of electric or steam railways

Walkable Community (or walkability) - a community or neighbourhood that is friendly to walking, determined by factors such as the presence or absence of sidewalks, trails or other pedestrian right-of-ways, road design, traffic conditions, land use patterns and safety issues.

Wayfinding - the mental process of orienting oneself in space. Wayfinding in transportation is routinely assisted by posted maps and schedules of services.

Zebra Crosswalk - The crossing is characterized by longitudinal stripes on the road, parallel to the flow of the traffic, alternately a light colour and a dark one. The similarity of the markings to those of a zebra give the crossing its name.

11.0 Letters of Support

EarthCare Sudbury

Greater Sudbury Police Services

Greater Sudbury Social Planning Council

Rainbow Routes Association

Sudbury & District Health Unit

Sudbury Regional Hospital

YMCA Sudbury

12.0 List of Appendices

- A:** Copy of the Public Input Survey
- B:** City of Victoria Sidewalk Priority Index
- C:** Bicycle Route Classification System
- D:** Bicycle Route Network Maps
- E:** Submission to Greater Sudbury Draft Comprehensive By-Law (Re: Bicycle Parking)
- F:** Mississauga Crossride Pilot Design
- G:** Thunder Bay Strollers on Buses Guidelines
- H:** Vancouver Film School Employee Pass Program
- I:** Thunder Bay Active Transportation Committee Model
- J:** List of Additional Resources
- K:** Funding Opportunities

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