



Policy Title: Bicycle Policy
Policy Number: TP011
Report Number: LPT2008-36
Approved by: City Council
Effective Date: 2008 July 14
Business Unit: Transportation Planning

BACKGROUND

Based on previous Council-approved policies and directions, The City of Calgary is committed to design and operate a city in which cycling is a meaningful transportation choice for social and economic interaction. This can be achieved by providing well-designed and operated, direct, convenient, safe and comfortable bicycle routes and facilities.

The Bicycle Policy and Needs Report consolidates and aligns with previous Council-approved policies and direction such as imagineCalgary, [the eleven Sustainability Principles](#) and The Transportation Hierarchy and reflects The City of Calgary's commitment to provide sustainable, non-motorized modes of transportation.

The Bicycle Policy and Needs Report identifies the basic transportation needs of cyclists and is based on best practices from North America and Europe.

Council approval of these reports will give Administration the direction to move forward in creating bicycle design guidelines for Calgary and in revising our current standards to reflect the transportation needs of cyclists.

PURPOSE

The intent of this policy is to:

- a) *Re-affirm the importance* of cycling as a meaningful, non-motorized choice of transportation
- b) Establish broad, city-wide policies that *provide direction and guidance* on how to plan, design, build, operate and maintain a city where cycling is a meaningful form of transportation for social and economic activities.



POLICY

The City of Calgary will use the following policies to support cycling as a year-round mode of transportation that is connected, convenient and obstruction-free, and accessible regardless of age, gender, income or culture:

1. Plan and build compact, mixed use communities.
2. Give priority to the planning, design, implementation and operation of bicycle routes and facilities with all land use and transportation planning and design.
3. Improve existing bicycle routes and facilities and build missing links.
4. Design facilities, educate the public and enforce laws to increase acceptance and understanding, and decrease conflicts, among road and pathway users.
5. Give priority to the maintenance of bicycle routes and facilities.
6. Provide bicycle routes that are of engaging character, safe and feel secure.
7. Provide bicycle parking and other amenities at destinations.
8. Ensure that bicycle facilities are included in the design and operation of City facilities (i.e. Calgary Transit and City-owned buildings).

Cyclists' Basic Transportation Needs

1. Space to ride
2. A smooth surface, clear of obstacles
3. A connected cycling system
4. Ability to maintain speed
5. Bicycle parking and amenities at destinations
6. Character and to be safe and feel secure
7. Education and enforcement

[See report for further information](#)

PROCEDURE

The above policies and needs will be used in several areas including the development process, capital projects, bicycle projects and maintenance and replacement activities.

Administration's next step of creating bicycle design guidelines, that reflect the basic transportation needs, will clarify procedures.

AMENDMENTS

None. New policy.



BICYCLE POLICY AND NEEDS REPORT

June 2008

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Goal

To design and operate a city in which cycling is a meaningful transportation choice for social and economic interaction. The goal can be achieved by providing well-designed and operated, direct, convenient, safe and comfortable bicycle routes and facilities.

Previous Council direction and Council-approved policies

- 2006-2008 Council Priority 2.1: Encourage alternate forms of transportation
- Sustainability Principles (2007)
- Pathway and Bikeway Plan (2000)
- Calgary Cycle Plan (1996)
- Municipal Development Plan (1995)
- Calgary Transportation Plan (GoPlan) (1995)
- Sustainable Suburbs (1995)

Guiding principle: The [multi-use] pathways and [on-street] bikeways should be designed, operated and maintained as a system for moving people via non-motorized modes, whether the purpose of the trip is transportation, recreation, fitness or any combination thereof. - Calgary Pathway and Bikeway Plan, 2000

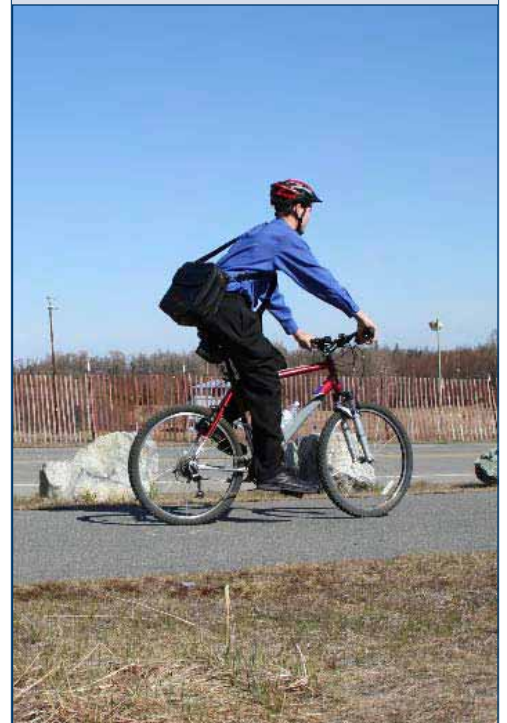
Bicycle policies

To support cycling as a year-round mode of transportation that is connected, convenient and obstruction-free, and accessible regardless of age, gender, income or culture:

1. Plan and build compact, mixed use communities.
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6. Provide bicycle routes that are of engaging character and feel safe and secure.
7. Provide bicycle parking and other amenities at destinations.
8. Ensure that bicycle facilities are included in the design and operation of Calgary Transit facilities.

Nothing compares to the simple pleasure of a bike ride.

- John F. Kennedy

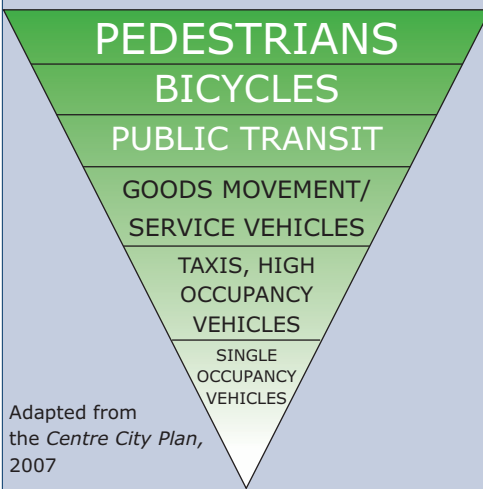




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The Transportation Hierarchy

Regardless of how someone travels, they will at one point be a pedestrian during their trip. This principle is best expressed by The Transportation Hierarchy illustrated below. Pedestrians and cyclists are given the highest priority because of the vitality they add to the public realm and because of their low environmental impact. Further, pedestrians feed into the transit system. Transit is given a high priority because of its ability to move people directly and efficiently with a low environmental impact. Commercial vehicles and trucks, including emergency vehicles, are a higher priority than personal vehicles because of the essential services they provide to the economic life and safety of the city. Single occupant vehicles are placed at the bottom of the hierarchy because of their significant environmental impact and high physical space needs per person served. This hierarchy will be used when reviewing or developing new plans, policies and strategies and when designing the public realm, including streets, sidewalks, open spaces and the +15 system. Further, it will be used when reviewing plans for new buildings and public facilities, ensuring that they support the development of a walkable, "green" and vibrant city.



These policies can be supported by work done in the following areas:

- Development process
- Capital projects
- Bicycle facility projects
- Maintenance and replacement of transportation and bicycle infrastructure

Definition of a cyclist

Cyclists can generally be defined as persons riding any cycle, propelled by human effort or a power-assisted device. Once a cyclist dismounts, they are considered a pedestrian.

Cyclists' basic needs

1. Space to ride
2. A smooth surface, clear of obstacles
3. A connected cycling system
4. Ability to maintain speed
5. Bicycle parking and amenities at destinations
6. Character and to be safe and feel secure
7. Education and enforcement



1. Space to ride

Design envelope

- For a regular bicycle, the essential operating width is 1.0 m and the width including comfortable lateral clearance is 1.5 m. The standard length is 1.8 m. (1)
- There is a growing trend towards other bicycle types, including bicycle trailers to transport children or goods. While the essential operating width with a bicycle trailer increases slightly, the length almost doubles from 1.8 m to 3.0 m, making turns more difficult to manoeuvre. (1)

Cyclists require space to ride and maneuver around potential obstacles. While the operating space for one cyclist is 1.5 m, more width is required where higher volumes of cyclists are expected, to allow for safe passing. As vehicle speeds and percent of trucks increase, more separation from traffic is required.

Benefits of cycling

Social

- Improved health (e.g. reduced risk of cancer and heart disease, which are the leading cause of death in Calgary) (2)
- Increased mobility options
- Energized communities: cycling supports and encourages the growth of services within short distances and fosters interaction between people

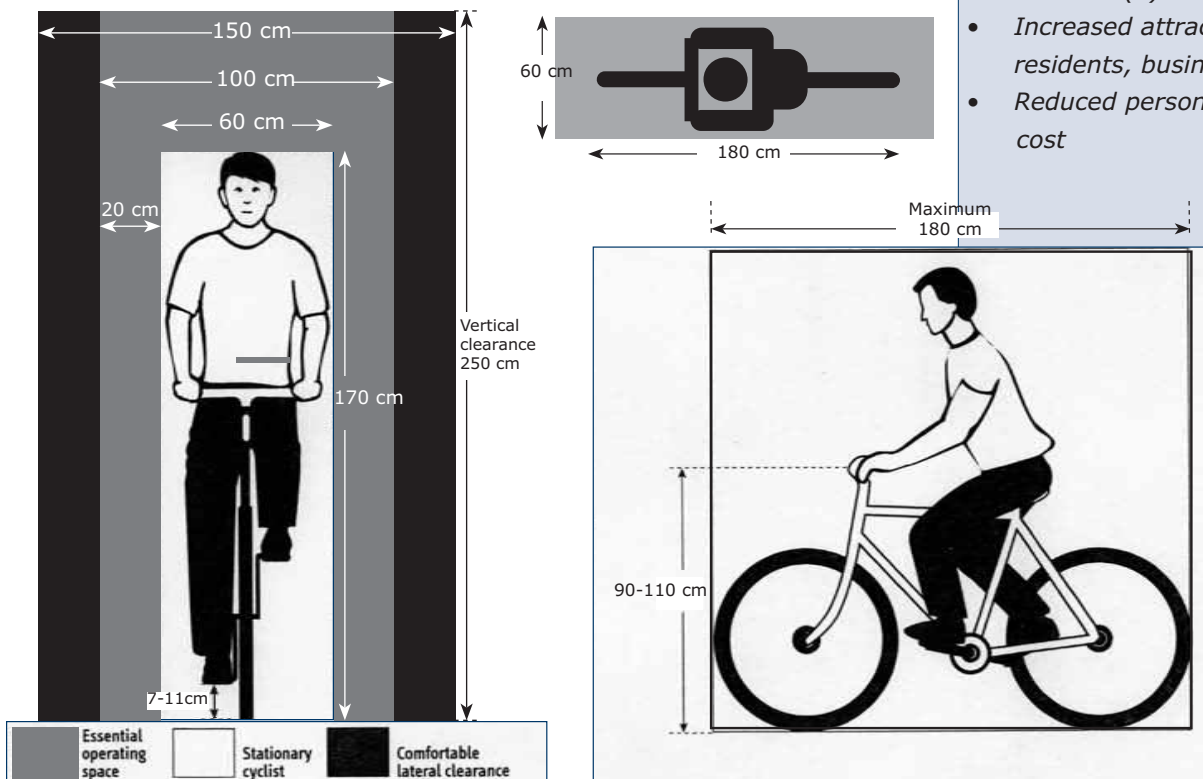
Environmental

- Decreased greenhouse gas emissions compared to driving
- Decreased energy consumption compared to driving
- More efficient use of land

Economic

- Lower health care costs
- Increased employee productivity due to physical activity and overall wellness (3)
- Increased attraction of new residents, businesses and tourism
- Reduced personal transportation cost

Cyclist space requirements



Source: adopted from *Technical Handbook of Bikeway Design*, Vélo Québec, 2003



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Calgary downtown commuter cyclist profile:

Typical downtown commuter cyclists are over 35, cycle to work 9 months of the year, and commute an average distance of 10 km and 28 minutes each way. Their main reason for cycling is exercise, and when not riding a bike, they are more likely to take transit than any other mode. They have access to a car but choose not to drive it to work. (4)

There are several facilities that are used to accommodate cyclists:

On-street

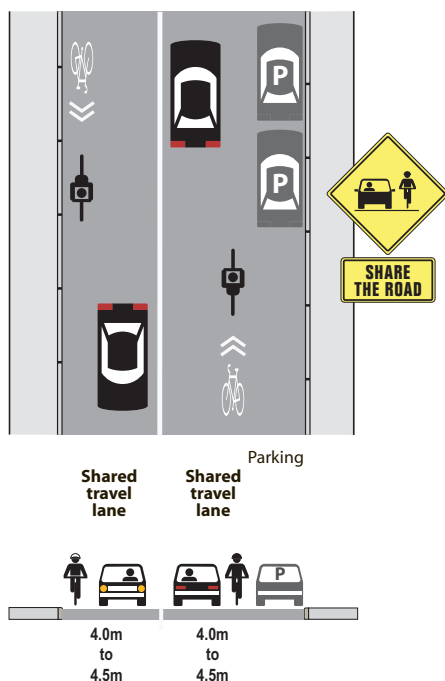
While cyclists are permitted on almost all roadways, we can provide guidance through signs, or designate extra space on the roadway to make cyclists feel more comfortable. Typical facilities include:

- Low volume, low speed (50km/h or lower) roads, that are often residential
- Higher speed, higher volume roads that require more space to accommodate cyclists through:
 - o Wide curb lane: A shared travel lane that is 4.0 to 4.5 m wide so that a motorist and a cyclist can travel side by side.
 - o Bicycle lane: A designated lane for cyclists, delineated by line marking, with a standard width of 1.5 to 2.0 m.
 - o Separated bicycle lane: A designated lane for cyclists, separated from traffic by a physical barrier, with a standard clear width of 1.5 to 2.0 m.

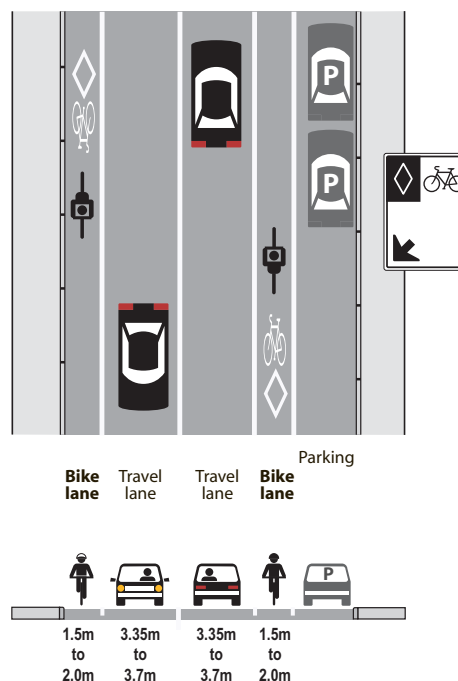
Specific routes should be designated to improve all weather service and convenience for cyclists.

Marked On-street Bicycle Routes

marked wide curb lanes



bicycle lanes



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Off-street

- Pathways and trails

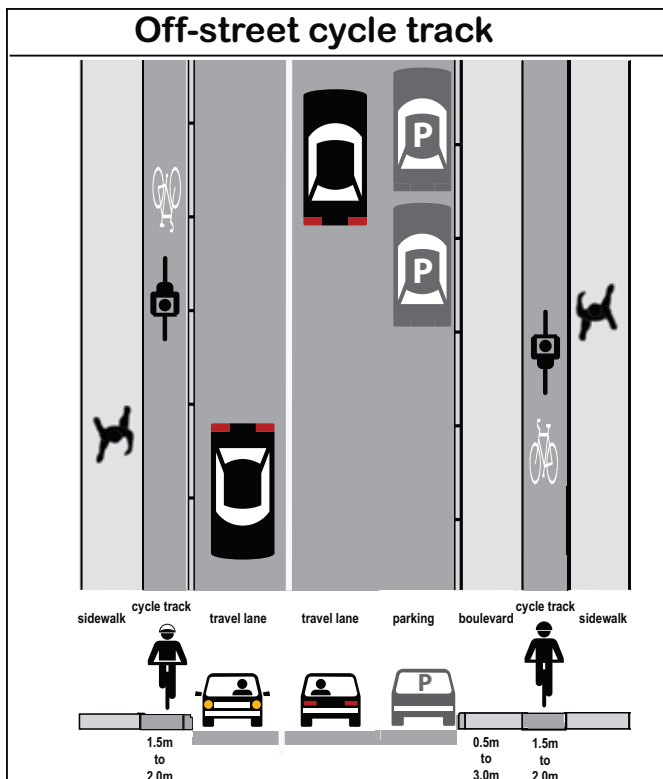
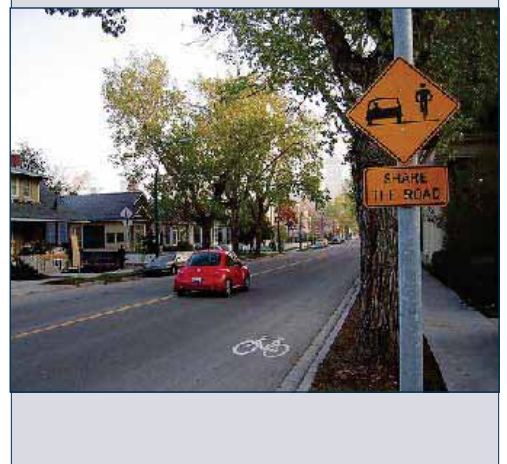
Pathways and trails can be shared between several non-motorized users, such as pedestrians and cyclists. Pathways are asphalt, concrete or brick surface, while trails are not.

Where there are a higher volume of pedestrians and/or cyclists present or expected, design and education measures should be taken to minimize existing and potential conflicts.

- Cycle tracks

A cycle track can be thought of as an off-street bicycle lane, next to the sidewalk, that is designated for cyclists with a minimum clear width of 1.5 m. They provide clear separation between moving vehicles and cyclists, as well as between pedestrians and cyclists.

In areas of higher bicycle volumes, more clear space is recommended for safe passing. Where there are parked vehicles adjacent to a cycle track, a buffer zone must exist to allow doors to swing open and people to unload without impeding the cycle track.





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2. A smooth surface, free of obstacles



A smooth surface is important for the comfort and safety of cyclists, as most bicycles have little suspension and tires inflated to high pressure. Potholes must be filled in and roads should be resurfaced in a timely manner. Transition points are also important to consider, such as the transition between an on-street bikeway and an off-street pathway. This transition should be smooth to avoid losing control of the front wheel.

Obstacles for cyclists can take many forms: gravel, snow, ice, catch-basins, construction debris, overgrown vegetation and even children and dogs.



Gravel must be removed from roads as early as the weather permits. Snow should be cleared from key roads and pathways in a timely manner to prevent ice from forming. Once formed, ice can be hazardous for cyclists and difficult to remove. Catch-basins should be flush with the roadway, and should be of a bicycle-friendly design to prevent wheels getting caught. Vegetation must be trimmed back to allow for good sightlines. Dog off-leash areas and areas where children play should be planned away or segregated from pathways to avoid creating conflicts.

3. Connectivity/continuity

Cyclists need to be able to undertake and complete meaningful journeys by bicycle...Bicycle routes on roadways and path[ways] should combine to form a network on which bicycle trips can be made effectively and conveniently. (5)

Cyclists have the same destinations as motorists, so connections between residential and employment centres, institutions and services are important. Links across major barriers are accomplished through pedestrian/bicycle overpasses.



Connections need to be direct in order to be convenient. The legibility of the network is also important. At points of transition it must be clear where the cyclist is intended to go. Clearly marked facilities and wayfinding signage enhance the legibility of a route.

Integrating bicycles with other modes of transportation is important to the viability of an efficient transportation network.

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There are...benefits gained from merging bicycles with transit which each mode alone cannot provide: transit enables the bicyclist to take longer trips; bicycle access enlarges transit's catchment area; transit enables the bicyclist to pass over or through topographical barriers; and bicyclists can increase transit ridership during surplus capacity periods such as weekends and midday. (6)

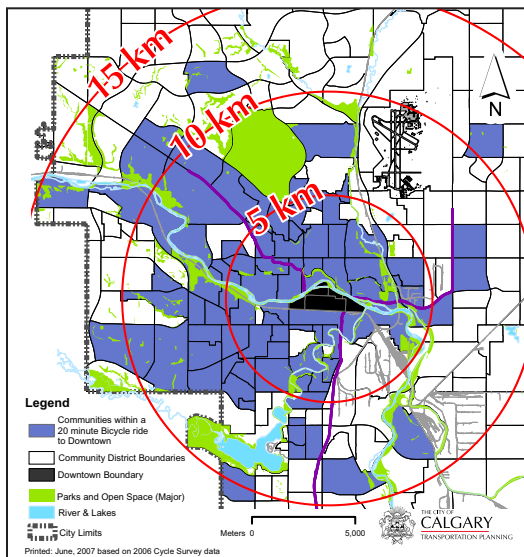
Measures of integration include safe and secure bicycle parking at transit stations; bicycles permitted on trains and buses; and improvements to bicycle routes and transit station access.

Park 'n' Bike sites offer another option for intermodal mobility. Calgarians can drive to designated parking lots, unload their bikes and cycle the rest of the way to their destination.

4. Maintain speed

Since cyclists are their own engines, they generally seek the route that demands the least effort, i.e., the one that offers the best combination of minimal distance, stops and climbing. (1)

For bicycles to be effective as a means of transportation, cyclists must be able to maintain speed without having to slow down or stop often. Cyclists typically travel at speeds between 20 km/h and 30 km/h, although they may reach 50 km/h downhill. Once slowed or stopped, it takes considerable time and effort to regain the desired operating speed. Bicycle routes, especially off-road, must be designed for continuous riding, minimizing steep gradients, rough surfaces, sharp corners, intersections or the need to give way to other users. (5)



Cycling trip times as reported by cyclists in the 2006 Commuter Cyclist Survey.

48% of Calgarians live within 10 km of downtown. (7)

Commuting distances

- Calgarians who commute to downtown by bicycle travel an average distance of 10 km each way. (4)
- The median one-way commute distance in Calgary (all modes) is 8.2 km. Of workers in 2006, almost one third commute less than 5 km one way. (8)

Transportation Choice

- Commuting trips by bicycle in Calgary accounted for 1.3% of all commuting trips in 2006. (8)
- The proportion of people cycling to work in Calgary experienced an 18% increase between 1996 and 2006. (8)





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5. Bicycle parking and amenities at destinations

Cyclists require more than a convenient network of routes. They need parking facilities and other amenities at their destinations. The lack of these amenities has been noted as a barrier to cycling.

Bicycle parking

Class 1 facilities are lockers or controlled areas where a bike can be stored. These facilities will protect bikes from adverse weather conditions, vandalism and theft by enclosing them in secure places. They are suitable for long-term parking at key cycling destinations, such as high-density residential complexes, employment centres and schools.

Class 2 facilities include any device that is specifically designed to park bikes. The preferred bike racks allow cyclists to secure both wheels and the bike frame to the rack. These facilities are primarily for short term use at a variety of destinations, including commercial and recreation centres, shopping centres, restaurants and schools.

Racks must be located close to building entrances and have passive surveillance to maximize convenience and security, but should not interfere with pedestrian movement.

Lockers and showers

Lockers are important for cyclists to store their belongings (bags, helmet, a change of clothing, etc.) at retail centres, transit stations and employment destinations.

Showers are important for people who cycle as a form of exercise, especially at employment destinations.

People who use other active modes for exercise or commuting (e.g. joggers and in-line skaters) will also benefit from shower and locker facilities.



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6. Character and to be safe and feel secure

Safety should be inherent in all roadway and pathway design. Particular attention must be given to the design of intersections, where cars, cyclists and pedestrians meet.

Additional design elements to consider include: Crime Prevention Through Environmental Design (CPTED), lighting at night and in tunnels, and minimizing delay for cyclists at intersections.

Ensuring that bicycle routing takes cyclists through areas where there are active uses and “eyes on the street” can increase their feeling of security. A route with visual interest and character adds to the enjoyment of the trip and can become the route of choice for cyclists.



7. Education and enforcement

Education goal: Increase acceptance and understanding among road and pathway users, reduce the frequency and severity of bike accidents, and reduce conflicts between cyclists, pedestrians and motorists.

Enforcement goal: Create a safer, more hospitable bike and pedestrian community through enforcement of law, by-laws and regulations as they apply to all road and pathway users. (9)

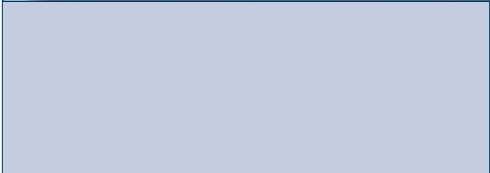
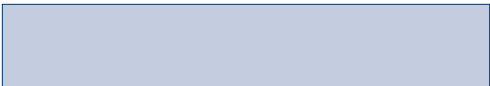
Conclusion

Cycling is a meaningful transportation choice for social and economic interaction in a city with well-designed and operated, direct, convenient, safe and comfortable bicycle routes and facilities. Excellence in design of bicycle facilities will increase the choice of cycling as a preferred travel mode for Calgarians.





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References

- (1) *Technical Handbook of Bikeway Design*, Vélo Québec, 2003.*
- (2) *Health Status Report*, Calgary Region, 2000.
- (3) Katzmarzyk, Peter T. and Janssen, Ian. "The Economic Costs Associated with Physical Inactivity and Obesity in Canada: An Update." *Canadian Journal of Applied Physiology* 29 (2004): 90-115.
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- (6) *Integration of Bicycles and Transit*, Transit Cooperative Research Program Synthesis 4, Transportation Research Board, 1994.
- (7) *City of Calgary Civic Census*, 2007
- (8) *Commuting Patterns and Places of Work of Canadians, 2006 Census*, Statistics Canada, 2008.
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**Bicycle-oriented design documents*