



EXECUTIVE SUMMARY

City Council has directed Administration to create a comprehensive Cycling Strategy in light of the 2009 Calgary Transportation Plan (CTP). With the approval of the CTP, there is an increasing requirement to provide transportation choices and an increased focus on sustainability, health and the environment.

At the 2010 June 7 Combined Meeting of Council, on Report LPT2010-32, Council approved the recommendation that directed Administration to:

1. Develop a comprehensive cycling strategy.
2. Conduct a safety review of the existing multi-use pathway system.
3. Bring forward these reports to the SPC on Land Use, Planning and Transportation no later than 2011 May.

Vision

The City has a vision to become one of the premier cycling cities in North America and is looking to make changes that will encourage more people to cycle in Calgary. The City needs to focus its efforts on key actions in the next three years. Combining these new actions with current practices will move Calgary towards that vision.

There are four specific and measurable goals that indicate a shift towards a more bicycle-friendly city:

1. More people cycling.
2. More bicycle infrastructure.
3. Safer cycling.
4. Increased satisfaction with cycling in Calgary.

What Calgarians said about cycling

The results from the September 2010 independent telephone survey show that Calgarians want to cycle. Nineteen per cent of Calgarians already ride at least once a week, and 59 per cent said they would like to cycle more often.

When asked about barriers to cycling, personal safety was the biggest concern. Most Calgarians who cycle feel safe cycling on pathways and quiet residential streets, and many feel comfortable on collector streets with bike lanes, even with bus traffic. The level of comfort declines significantly without bike lanes.

The City's approach

Based on the 2010 survey, Calgarians can be grouped into four categories of cyclists: fearless, confident, interested and reluctant. Confident and interested cyclists make up 70 per cent of survey respondents. They are not comfortable sharing the road with traffic and want dedicated bicycle facilities. The City needs to start planning for these groups to get more people cycling.

Based on the results of the engagement process and the direction provided by CTP, an action plan has been developed and organized into the three pillars needed to support a bicycle-friendly city (Figure E-1).

Pillar One: Plan, design and build.

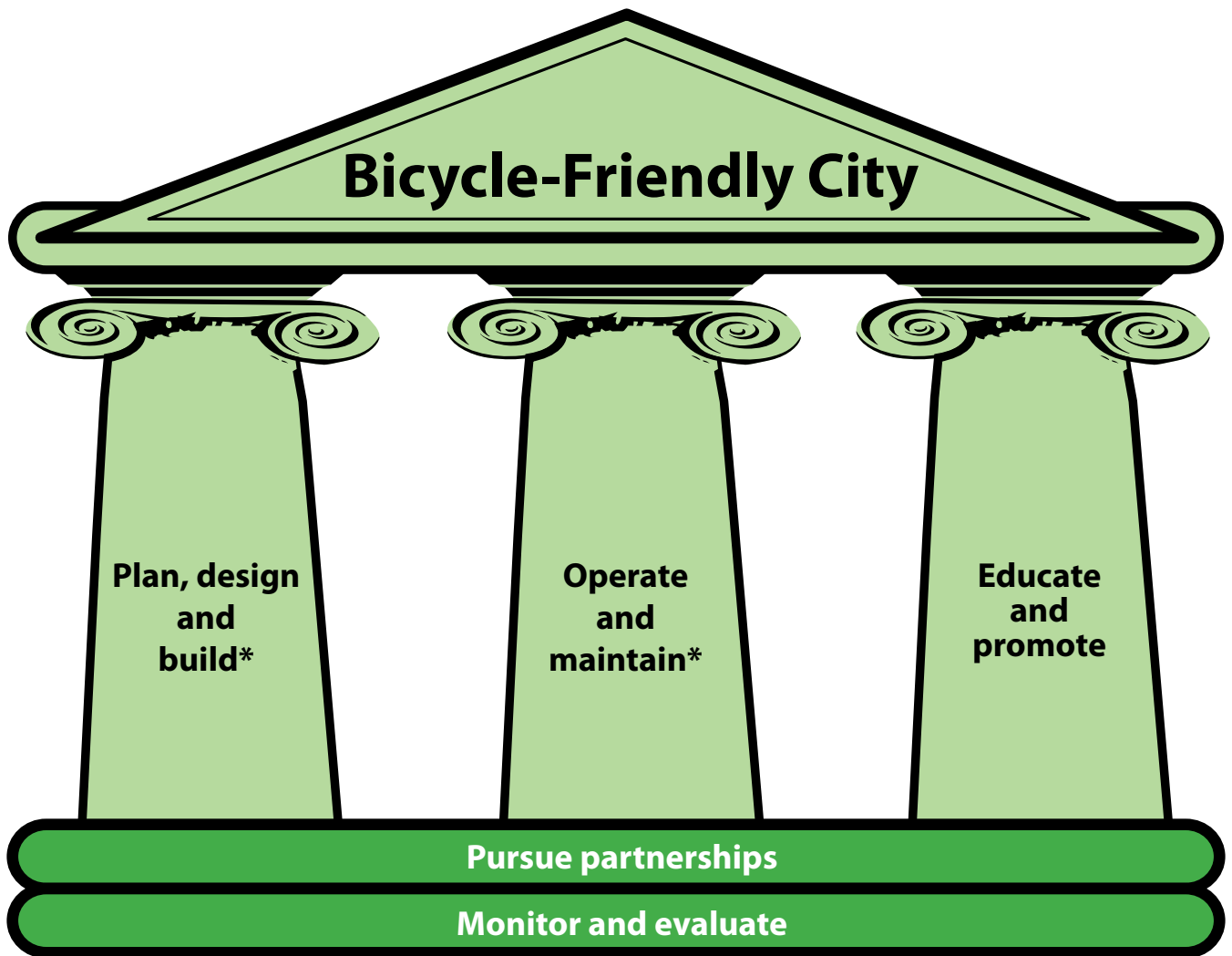
- Provide dedicated space on streets to help Calgarians feel safer and more bicycle parking to make it more convenient to lock up a bicycle. Focus on areas where the largest gains in bicycle volumes (counts) can be realized.

Pillar Two: Operate and maintain.

- Provide enhanced operation and maintenance services to make cycling safe, comfortable and practical. Focus on areas with the largest bicycle volumes (counts).

Pillar Three: Educate and promote.

- Develop and deliver a comprehensive bicycle education and promotion program.



** Focus on enhanced bicycle level of service in high use/high growth areas.*

Figure E-1: Pillars of a bicycle-friendly city.

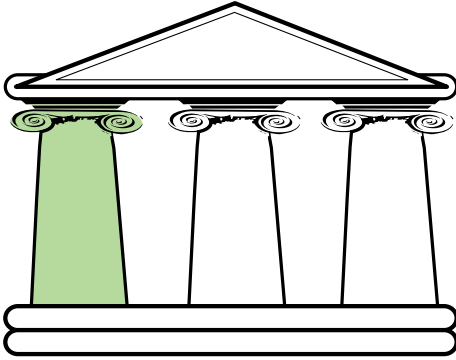
Each of the three pillars is comprised of a set of actions needed in the next three years and beyond to support Calgary’s transition to a more bicycle-friendly city. While some actions can be accomplished with existing staff and resources, others will require more funding. The City will also pursue strategic partnerships.

The Strategy contains 50 actions for The City to undertake in the 2012-2014 business plan and budget cycle. The City will need to sustain about half of those actions after 2014 and schedule future actions in the 2015-2017 business plan and budget cycle.

Some actions identified in The Strategy are related to multi-use pathways and are part of the Pathway Safety Review.

Key actions

Achieve the vision by creating an expanded, comfortable, convenient on-street bicycle network to complement the existing premier pathway network.

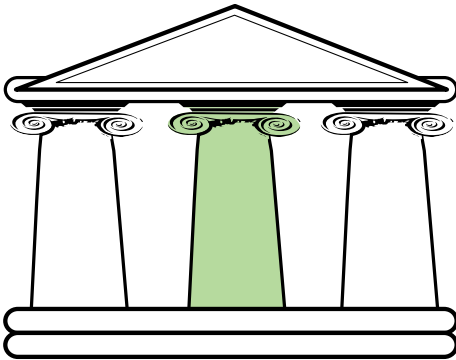


Pillar One: Plan, design, build.

- Immediate and short-term implementation of on-street bikeways
- Priority pilot projects
- More bicycle lanes and separated lanes
- City-wide Pathway and Bikeway Implementation Plan
- Public bike share system by 2013

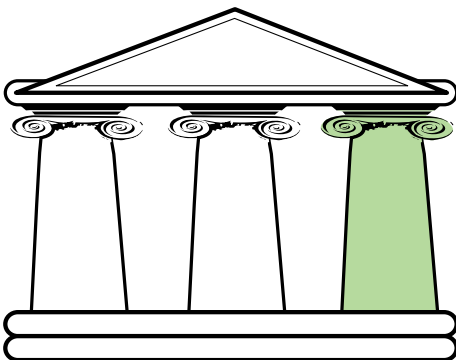
Vision:

To become one of the premier cycling cities in North America.



Pillar Two: Operate and maintain.

- Higher standard for operation and maintenance
 - Pavement marking and signs
 - Gravel sweeping
 - Snow and ice control
 - Cycling surface



Pillar Three: Educate and promote.

- Ongoing safety and education programs
- Partnerships
- Celebrations of new infrastructure
- Support of major cycling events and initiatives

Resources

Three dedicated staff

1. Bicycle Design Engineer, in the Roads business unit, to help develop a bicycle design guide and prepare conceptual and detailed designs for on-street bikeways, Complete Streets and other bicycle amenities.
2. Bicycle Planner, in the Transportation Planning business unit, to coordinate and plan bicycle route improvements and pilot projects and manage the creation of a new Pathway and Bikeway Implementation Plan.
3. Bicycle Education and Promotion Coordinator, in the Transportation Planning business unit, to develop an ongoing education and promotion program and work with partners on delivering educational messages and promotional events to Calgarians.

Capital costs (2012-2014)

1. Plan, design and build	\$ 27,900,000
2. Monitor and evaluate	\$ 100,000
<i>LESS partner/sponsor contributions</i>	<i>\$ (5,300,000)</i>
<i>LESS existing program funding</i>	<i>\$ (10,500,000)</i>
Unfunded capital costs	\$ 12,200,000

Ongoing annual operating costs

1. Operate and maintain	\$ 625,000
2. Educate and promote	\$ 500,000
3. Three dedicated staff	\$ 360,000
4. Public bike share	\$ 425,000
<i>LESS sponsor contribution to public bike share</i>	<i>\$ (425,000)</i>
Unfunded annual operating costs	\$ 1,485,000

One-time operating costs (2012-2014)

1. Engage and create new city-wide Implementation Plan	\$ 480,000
2. Bicycle Design Guides	\$ 230,000
Unfunded one-time operating costs	\$ 710,000

Comparison of on-street bicycle route improvements to other transportation infrastructure costs (per kilometre)

On-street bicycle route improvements		
Bicycle lanes (paint only)	\$ 25,000	
Bicycle lanes, curb/concrete work, traffic signals, etc.	\$100,000	
Multi-use pathways	\$150,000	1.5 – 6 X more \$\$
Road widening (2 to 4 lanes)	\$8,500,000	85 – 340 X more \$\$
Interchange	\$50,000,000	500 – 2,000 X more \$\$

SUMMARY OF ACTIONS (2012-2014)

6.1 Pillar One: Plan, design and build bicycle infrastructure

6.1.1 Planning and design tools for bicycle routes

- C1 Engage key stakeholders in creating a new Pathway and Bikeway Implementation Plan.
- C2 Update Calgary's bikeway GIS layer information regularly.
- C3 Migrate the bikeway GIS layer into TransNET (a graphical representation of Calgary streets).
- C4 Develop a bicycle design guide for Calgary. This will provide guidance for the inclusion of cycling facilities into the Complete Streets Guide.
- C5 Plan, design and build priority pilot projects including cycle tracks and bike boxes.
- C6 Support the development of an updated national bicycle design guide.
- C7 Review and suggest changes to municipal bylaws to support cycling and bicycle facility design.
- C8 Review and suggest changes to provincial laws to support cycling and bicycle facility design.

Pathway Safety Review recommendations:

- Develop design options for twinning pathways (separate “wheels” from “heels”).
- Increase minimum width on local pathways from 2.0 to 2.5 metres.
- Enhance consistency on planning, design approval and inspections in regards to the 1 metre safety clearance and setback requirements. In the few cases where this can't be achieved, review the hazard and determine mitigation measures.
- Create a lighting policy for pathways.

6.1.2 Plan and build bicycle infrastructure

- C9 Complete short-term bicycle route improvements as identified in the University of Calgary Area Pedestrian and Bicycle Improvement Project and the Brentwood Station Area Mobility Assessment and Plan.
- C10 Improve bicycle routes in the city centre based on the Centre City Action Plan Map (Appendix A).
- C11 Implement a public bike share system in the Centre City.
- C12 Plan and implement bicycle route improvements to stations along the West LRT line.
- C13 Explore the creation of a new secure bicycle parking scheme at LRT stations along the West LRT line.
- C14 Plan and implement bicycle route improvements to Saddle Ridge LRT station.
- C15 Plan and implement bicycle route improvements to Rocky Ridge / Royal Oak and Tuscany LRT station.
- C16 Plan improvements to bicycle routes in conjunction with new transit hubs (e.g. Southeast Transitways and BRT Network)
- C17 Plan improvements to bicycle routes in conjunction with CTP/MDP-aligned work in Activity Centres, Nodes, and Corridors.
- C18 Continue to build bicycle route missing links.
- C19 Develop a plan and retrofit selected signals with the ability to detect bicycles.
- C20 Explore the feasibility to include pathways next to existing LRT or BRT right-of-way and protect for pathways next to future LRT or BRT right-of-way by including them in functional and land use plans.

6.1.3 Provide bicycle amenities

- C21 Continue to offer and further promote the Bicycle Rack Sponsorship Program to install bicycle racks on public land at the request of Calgarians.
- C22 Require showers and lockers for cyclists in employment-intensive areas in new buildings.
- C23 Update The City's Bicycle Parking Handbook for the implementation of bicycle amenities such as bicycle parking, lockers and showers.
- C24 Develop strategies for implementing bicycle stations in Calgary.
- C25 Explore ways in which to support and promote bicycle-related programs and services delivered by others.

6.2 Pillar Two: Operate and maintain bicycle infrastructure

- C26 Monitor the gravel-sweeping of on-street bicycle routes to determine how well the pre-sweeping is working and update practices based on results.
- C27 Develop a new level of service for high quality gravel-sweeping and snow and ice control of on-street bicycle routes in high use / high growth areas.
- C28 Promote the annual roadway pothole repair program to encourage cyclists to report pothole locations on bicycle routes.
- C29 Maintain bicycle route pavement marking and signs.

Pathway Safety Review recommendations:

- Establish ongoing capital funds to address pathway lifecycle needs taking into consideration the backlog of current declining pathway surfaces and future needs identified through annual surface inspections.
- Resource additional operating funds to increase minor pothole and miscellaneous repairs thereby extending the life of some pathways before life cycling is required.
- Establish capital funds to address safety issues on the existing pathway system infrastructure, excluding pathway surfaces. Safety issues relating to the following pathway components will be addressed: adjacent landscaping, curves, hills, blind corners, signage, intersections, bollards, bridge/pathway transitions, lighting, fixed objects within 1 metre.
- Increase annual snow and ice removal on pathways from 157km (22%) to 300km (42%).

For the upgrading or life cycling of existing pathways:

- Increase widths of regional pathways in river and creek valleys to 4m wherever possible.
- Increase widths of regional pathways in the uplands to 3m wherever possible
- Increase widths of local pathways to 2.5m wherever possible.
- In some areas, consider twinning as an alternative to increasing widths.

6.3 Pillar Three: Bicycle education and promotion

- C30 Develop and deliver an ongoing bicycle education program for cyclists, motorists and pathway users to help increase understanding and reduce conflicts. Partner with other organizations to deliver the program citywide.
- C31 Develop bicycle training and education courses and work within The City and with external groups to pilot the courses to a variety of Calgarians.
- C32 Work with the Calgary Police Service to develop education and enforcement campaigns to ensure that cyclist and motorist behaviour is safe, respectful and adheres to laws.
- C33 Explore different ways of providing the most up-to-date pathway and bikeway routing information to Calgarians on an ongoing basis.
- C34 Develop and deliver an ongoing bicycle promotion campaign about the benefits of cycling as a fun, healthy, convenient and inexpensive way to travel. Partner with organizations and retailers and seek opportunities to collaborate on common goals to encourage cycling.
- C35 Formalize June as Bike Month in Calgary.
- C36 Host a bicycle event/street festival (Ciclovía/Parkway) in coordination with Canada Day at Prince's Island Park every year as part of developing and encouraging the use of public spaces for the enjoyment of all Calgarians.
- C37 Host a "Developing Ciclovía /Parkway Summit" in Calgary in October 2011 in preparation for the 2012 Canada Day Ciclovía /Parkway and invite speakers with experience in developing these events.
- C38 Organize and host a pre-conference in Calgary in advance of the international Velo-City cycling conference to be held in Vancouver on June 23–26, 2012.
- C39 Explore how to expand The City's scope to further support the Active and Safe Routes to School program in Calgary.
- C40 Explore how to support and encourage businesses that use bicycling as a key part of their business or that support employees who ride a bicycle.
- C41 Purchase temporary bicycle racks to set up at festivals and events around Calgary to encourage people to cycle.

Pathway Safety Review recommendations:

- Develop & implement a comprehensive joint Education Plan for multi-use pathways with Transportation, Parks, and Animal & Bylaw Services (ABS).
- Increase bylaw officer presence and targeted enforcement on the pathways with a joint Parks and Animal & Bylaw Services work plan.
- Investigate feasibility of allowing electric bikes and Segways on pathways.

8.0 Monitoring and evaluation

8.1 Data collection and reporting

- C42 Investigate best practices and technology for cycling data collection, purchase automated counting stations and install them in strategic locations.
- C43 Investigate the inclusion of a question regarding on-street bikeways in the Citizen Satisfaction Survey to update and report on indicator 16 in Table 8-1.
- C44 Investigate conducting periodic telephone surveys to update and report on indicators 17, 18 and 19 in Table 8-1.
- C45 Investigate improvements to bicycle collision reporting format and procedures with the Calgary Police Service and the Government of Alberta.
- C46 Report to Council, Administration and the public on all performance measures prior to each business planning cycle, beginning with the 2015-2017 business planning cycle.
- C47 Report yearly to Council on the status of actions identified in the Cycling Strategy.

9.0 Resources and funding

- C48 Dedicate a Bicycle Design Engineer in the Roads business unit to help develop a bicycle design guide, prepare conceptual and detailed designs for on-street bikeways, Complete Streets and other bicycle amenities.
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1.0 CREATING A COMPREHENSIVE CYCLING STRATEGY

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There are four specific and measurable goals that indicate a shift towards a more bicycle-friendly city:

1. More people cycling.
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1.1 Framework — From vision to action

The Cycling Strategy aligns with the CTP and the Municipal Development Plan (MDP) and moves Calgary into the realm of implementation — of developing strategies and actions that align with the higher-level plans (Figure 1-1). The strategy also aligns with previously approved Council policies, such as the 2008 Bicycle Policy and the 2001 Pathway and Bikeway Plan.

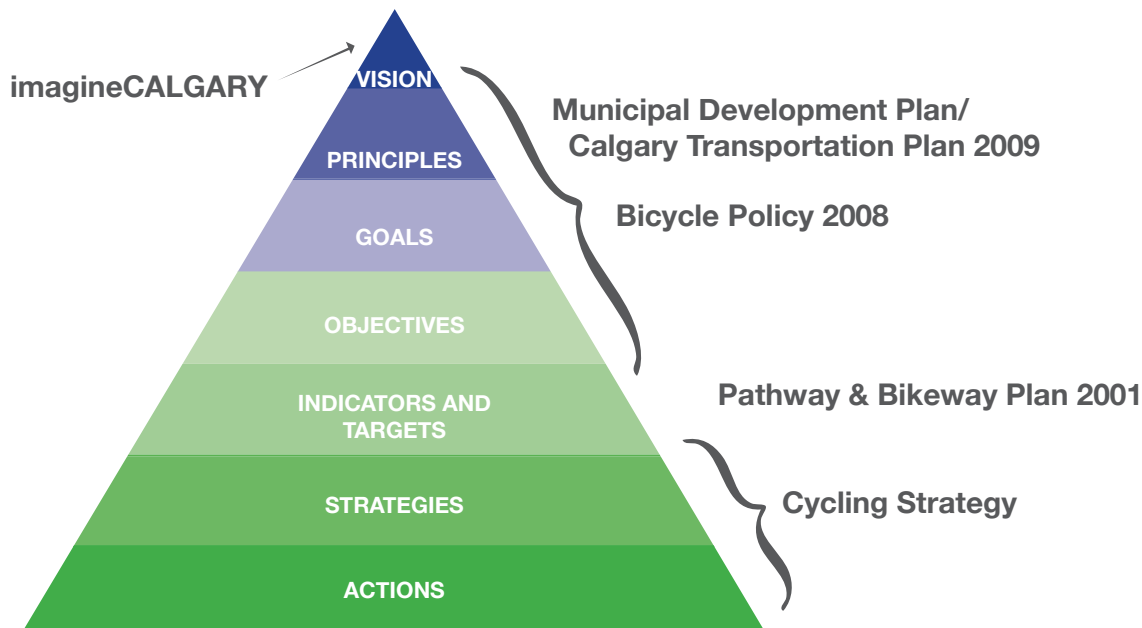


Figure 1-1: Decision Support Framework (adapted from MDP page 2-2)

The imagineCALGARY public engagement process developed Sustainability Principles, of which the following are particularly relevant to creating a bicycle-friendly city:

Principle 4. Provide a variety of transportation options.

Principle 9. Connect people, goods and services locally, regionally and globally.

Principle 10. Provide transportation services in a safe, effective, affordable and efficient manner that ensures reasonable accessibility to all areas of the city for all citizens.

Some of the key directions in the MDP that relate to cycling are:

Direction 2. Provide more choice within complete communities.

Direction 5. Increase mobility choices.

Direction 7. Create Complete Streets.

Direction 8. Optimize infrastructure.

CTP Transportation Goals that support cycling are:

Goal 2: Promote safety for all transportation systems users.

Goal 3: Provide affordable mobility and universal access for all.

Goal 4: Enable public transit, walking and cycling as the preferred mobility choices for more people.

Goal 5: Promote economic development by ensuring the efficient movement of workers and goods.

Goal 6: Advance environmental sustainability.

Goal 7: Ensure transportation infrastructure is well managed.

The CTP identifies cycling, walking and transit as the most sustainable choices for travel (Figure 1-2) because they:

- Require less energy.
- Need less infrastructure and typically cost less to build.
- Are available to almost all Calgarians.

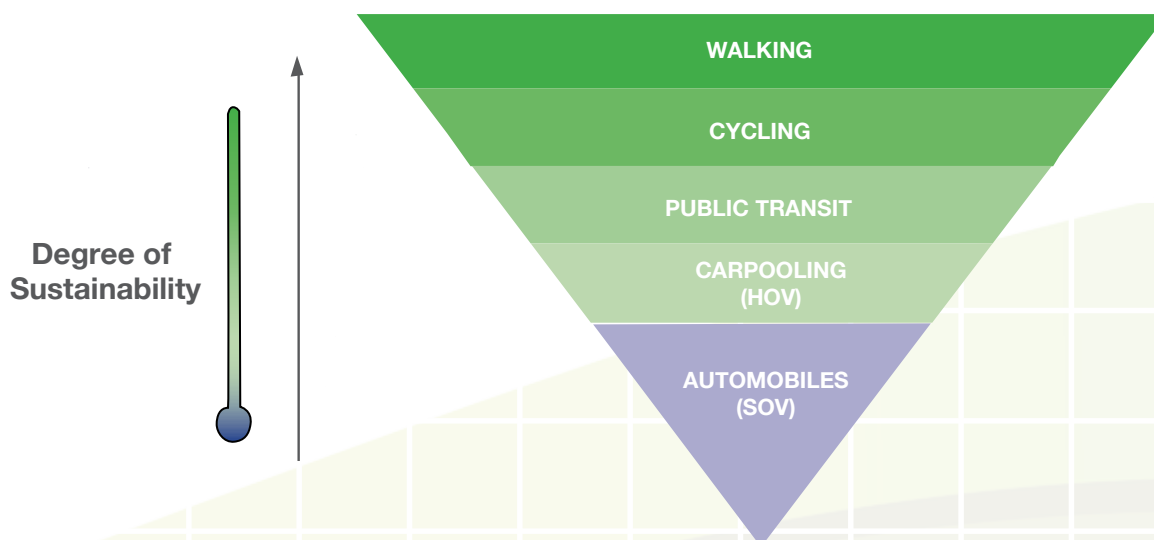


Figure 1-2: The Transportation Sustainability Triangle



2.0 CYCLING IN CALGARY – LOOKING BACK

In order to move forward, it is important to review the past, to see what others are doing and to listen to Calgarians. Section 2 of the report examines cycling trends over the last decade and examines what The City has achieved.

2.1 Calgary cycling data

Calgary's future as a bicycle-friendly city has a solid foundation. The City has collected data for more than a decade. The data is used to report on three of the four main goals for moving Calgary towards becoming one of the premier cycling cities in North America; that is, more people cycling, more bicycle infrastructure and safer cycling.

2.1.1 Cycling activity

Since 1958, The City has counted vehicles and people entering and leaving Calgary's Central Business District (CBD). Cycling volumes have been fairly consistent over the last decade with 9,200 weekday cycling trips entering or leaving the CBD (2002 data is atypical and excluded from the calculation) (Figure 2-1).

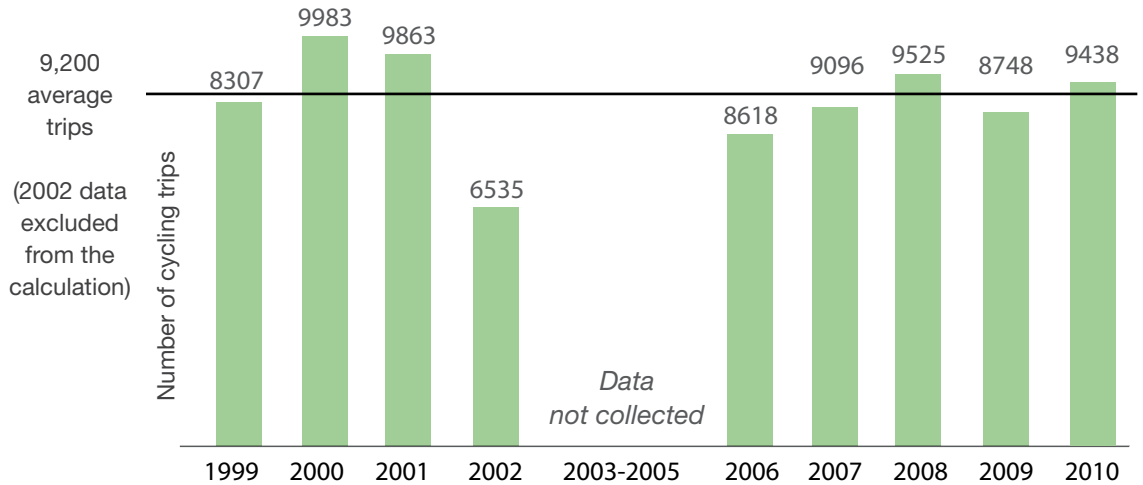


Figure 2-1: Number of cyclists observed entering or leaving the CBD, weekdays, during a 16-hour period

Source: The City of Calgary annual CBD cordon

The modal share for cycling, defined as the proportion of Calgarians choosing to cycle to work, has been consistent over the last decade. According to Statistics Canada, the percentage of the population cycling to work in the Calgary census metropolitan area slipped from 1.5 per cent in 2001 to 1.3 per cent in 2006. The City of Calgary's counts of the CBD morning peak hour (inbound) in 1999 and 2010 show an increase of 0.2 per cent in cycling mode share, from 1.7 per cent to 1.9 per cent (Figure 2-2).

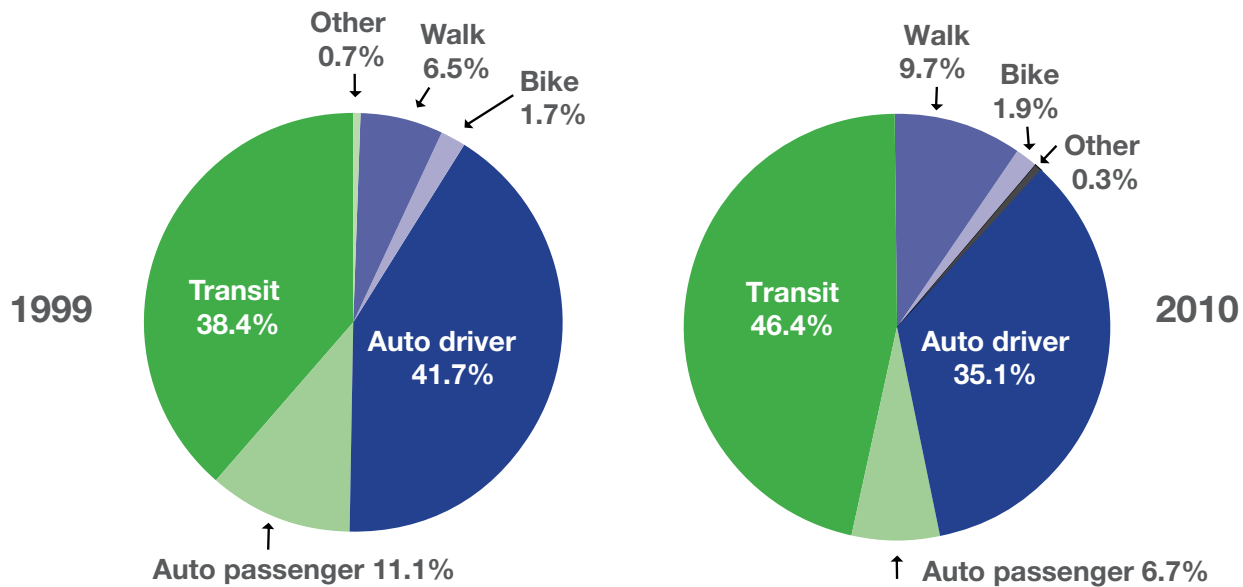


Figure 2-2: Downtown morning peak hour inbound modal split. Source: City of Calgary annual CBD cordon

Between 2000 and 2006, the number of female cyclists downtown decreased slightly, from 24 per cent to 21 per cent (Figure 2-3). At the University of Calgary in 2009, the gender split was found to be more even, with females accounting for 44 per cent of cyclists (Figure 2-4). Survey results in other cities such as Toronto, Ottawa and Minneapolis have found that about 37 per cent of cyclists are female. In Calgary, a 2010 city-wide telephone survey also found that females are most likely to be “interested but concerned” about cycling. This suggests that there is an opportunity to attract more females to cycling if their concerns are addressed.

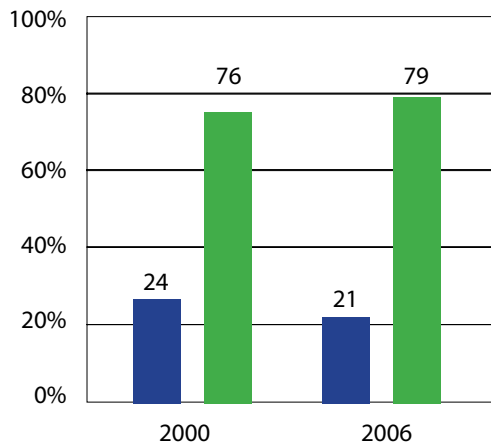


Figure 2-3: Gender of downtown cyclists. Source: The City of Calgary Downtown Commuter Cyclist Surveys, 2000 and 2006

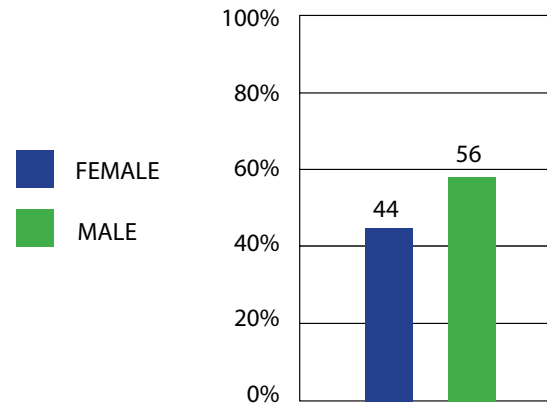


Figure 2-4: Gender of University of Calgary cyclists. Source: 2009 University of Calgary Commuter Cyclist Survey

2.1.2 Cycling infrastructure

Calgary's multi-use pathway and on-street bikeway network has almost doubled from 550 kilometres in 1999 to 1,067 kilometres in 2010 (Figure 2-5). In 2010, Calgary had 712 kilometres of multi-use pathways and 355 kilometres of on-street bikeways, 328 kilometres of which were signed bikeways and 27 kilometres of which were bikeways with pavement marking — bike lanes and marked shared lanes.

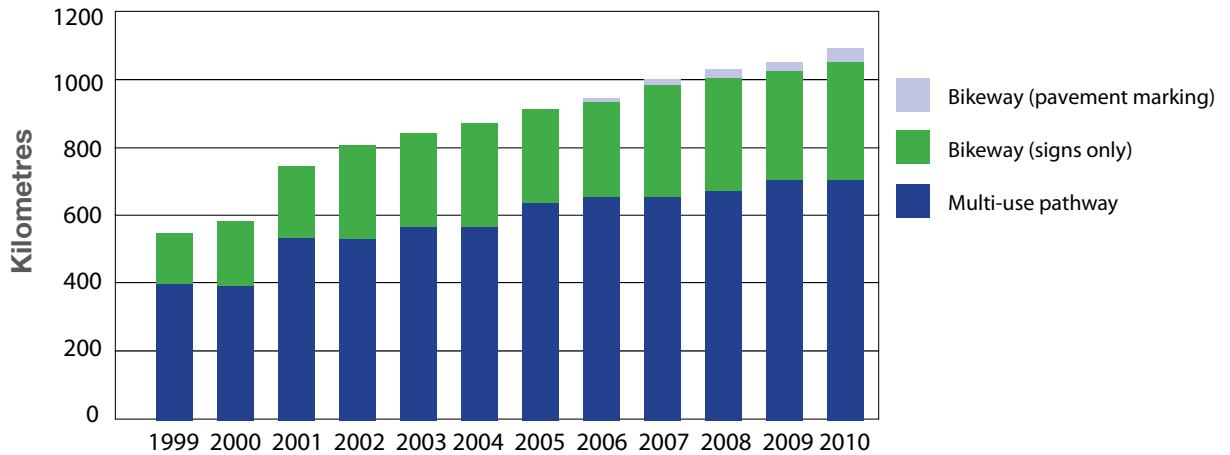


Figure 2-5: Length of Calgary multi-use pathways and on-street bikeways. Source: The City of Calgary

From the 2000 and 2006 Downtown Commuter Cyclist Surveys it appears that facilities for bicycle parking downtown improved in that time (Figure 2-6). Overall, the proportion of downtown cyclists parking at an enclosure or rack declined, with an increase in locker use and “other”, such as indoor bicycle rooms. This may be an indication of more indoor bicycle rooms in the downtown area and bicycle parking available at two Calgary Parking Authority parking garages.

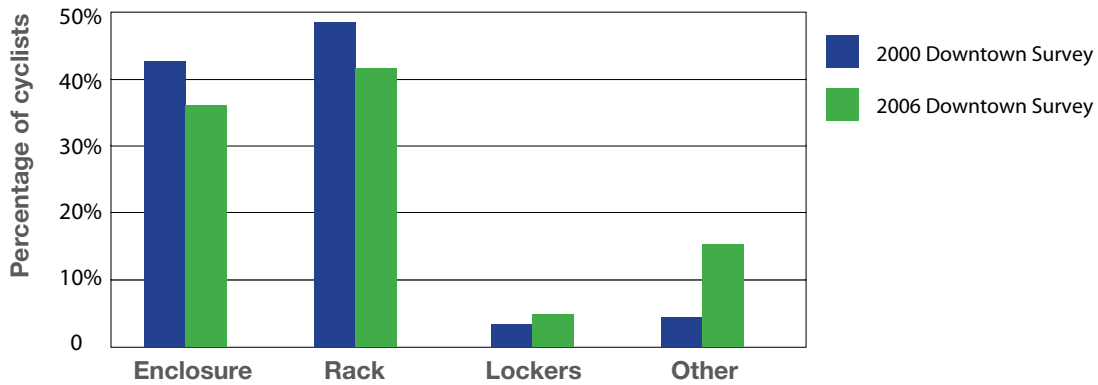


Figure 2-6: Type of bicycle parking used by cyclists at downtown destinations.

Source: The City of Calgary Downtown Commuter Cyclist Surveys, 2000 and 2006.

A City of Calgary CBD Bicycle Parking Inventory, conducted in August 2007, identified a total of 5,018 private bicycle parking stalls. Of these, 55 per cent were occupied and 62 per cent were weather protected. A 2008 survey of downtown building managers found that 46 per cent of respondents provide lockers and showers for cyclists.

2.1.3 Safety

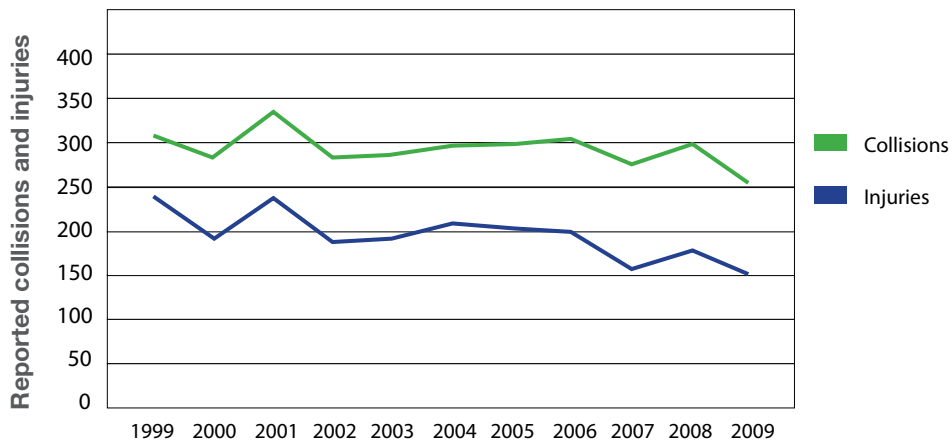


Figure 2-7: Number of reported cyclist collisions and injuries. Source: Calgary Police Service

The Calgary Police Service tracks the number of reported cyclist collisions, injuries and fatalities. Collisions and injuries are on the decline, with 2009 reporting a record low for both (Figure 2-7). The per capita collision and injury rate declined as well, from 28.7 collisions and 22.0 injuries per 100,000 Calgarians in 1999 to 23.9 collisions and 14.5 injuries in 2009. There were 11 cyclist fatalities between 1999 and 2009.

2.2 City of Calgary cycling achievements

Calgary's cycling achievements over the last decade have set the foundation for a more bicycle-friendly city. Progress has been made in the areas of creating policy and plans, allocating resources, implementing infrastructure, and delivering bicycle education and promotion.

2.2.1 Policies, plans and surveys

Calgary has produced many plans and policies since the late 1970s related to cycling. Each plan and policy has advanced cycling in Calgary. The City of Calgary has also conducted a number of bicycle surveys over the years to inform The City about preferred routes, behaviours and preferences of cyclists.

Table 2-1: Policies, plans and surveys.

1958 to present – CBD Cordon Count	<ul style="list-style-type: none"> This is a survey of all trips, including cycling trips, entering or leaving the CBD on weekdays over a 16-hour period.
1996 – Calgary Cycle Plan	<ul style="list-style-type: none"> The Cycle Plan contained 45 recommendations of which 85 per cent are complete or in progress.
2000 – Downtown Commuter Cyclist Survey	<ul style="list-style-type: none"> This was the first comprehensive survey of cyclists entering downtown Calgary, weekdays between 6:30 a.m. and 9 a.m. The survey had a 58 per cent response rate and the results provide the baseline data for future surveys and trends with respect to downtown cyclists.
2001 – Pathway and Bikeway Plan	<ul style="list-style-type: none"> The plan developed the principles for an integrated multi-use pathway and on-street bikeway network, including a detailed city-wide implementation plan map, and engaged over 60 stakeholder groups. The plan contained 27 recommendations of which 89 per cent are complete or in progress.
2001 – Wide curb lane standard adopted on major roads	<ul style="list-style-type: none"> Calgary's first change in street standards to provide space for on-street cycling.
2003 – Bicycle Parking Handbook	<ul style="list-style-type: none"> Calgary's first guideline on bicycle parking type, placement and quantity for property development.
2005 – Traffic Calming Policy	<ul style="list-style-type: none"> The policy includes a variety of tools to help make community streets more comfortable for cyclists through decreasing vehicle speed and volumes.
2006 – Downtown Commuter Cyclist Survey	<ul style="list-style-type: none"> This was a follow-up to the 2000 survey and informed The City if any cycling data was changing with respect to cyclist route preferences, behaviours and demographics.
2007 – CBD Bicycle Parking Inventory	<ul style="list-style-type: none"> This was the first time that The City surveyed private building owners in the CBD on the type and number of bicycle parking facilities they had.
2008 – Bicycle Policy	<ul style="list-style-type: none"> The policy re-affirmed cycling as a meaningful, non-motorized choice of transportation and established 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.
2008 – Bicycle Parking into Land Use Bylaw 1P2007	<ul style="list-style-type: none"> The Land Use Bylaw was updated to include bicycle parking requirements for new developments.
2009 – University of Calgary Commuter Cyclist Survey	<ul style="list-style-type: none"> An online survey, co-sponsored by The City of Calgary and the University of Calgary, gathered information about commute characteristics and barriers to cycling from 1,100 cyclists and potential cyclists, capturing over 85 per cent of the estimated number of students and staff who cycle to campus.
2009 – Calgary Transportation Plan	<ul style="list-style-type: none"> Identifies walking and cycling as the most sustainable forms of travel. Identifies the principles and alignment for the Primary Cycling Network (PCN), which connects Major Activity Centres and will provide high quality service for cycling. States that cycling will be "accommodated with high standards" on most new street types (arterial, urban boulevard, neighbourhood boulevard and parkway). Sets a target for city-wide walking and cycling trips to increase from 14 per cent today to 20-25 per cent in 60 years.
2010 – Centre City Mobility Plan	<ul style="list-style-type: none"> Identifies the bicycle network in the Centre City.



2.2.2. Resources

Infrastructure funding

Before 2006, there was funding to build multi-use pathways but no dedicated transportation funding for bicycle infrastructure. Starting in 2006, some funding was dedicated for bicycle infrastructure; by 2009, four per cent of transportation infrastructure funding for the 10-year period 2009–2018 (\$126 million of \$3.2 billion) was dedicated for pedestrian and bicycle projects. The scope of large capital projects, such as interchanges, has evolved to include funding for bicycle facilities.

City staff

- Transportation Department staff levels dedicated to pedestrian and bicycle policy, planning, design and construction management have increased since 1999. Staff levels for operating and maintaining on-street bicycle routes have stayed the same.
- Parks Department staff levels dedicated to multi-use pathway policy and planning have stayed the same since 1999. Staff levels for operating and maintaining the pathway system have increased; however, the increase has not been proportional to the increase in the length of the pathway network.

Developing expertise

Regular training in bicycle transportation policy, design and best practices has occurred over the last decade by attending webinars, seminars, courses, workshops and conferences.

Additional training has been provided for City staff and members of the public by visiting experts, such as Dan Burden from Walkable Communities and Marc Jolicoeur from Vélo Québec.



2.2.3 Infrastructure

Bicycle boulevards and bicycle lanes

When Calgary started providing bicycle routes, it was through bicycle route signage on low-traffic, low-speed residential streets. Since the early 2000s, The City has created a few bicycle boulevards and bicycle lanes to enhance cyclist comfort and safety. Bicycle boulevards have the advantage of lower traffic volumes and speeds, but are less visible to the majority of Calgarians.

A variety of tools are used to make residential streets more comfortable for cyclists, including:

- Speed humps to help slow motor vehicle traffic without affecting cyclist comfort.
- Intersection improvements such as bicycle-actuated signals that help cyclists to cross busier streets.
- Traffic circles to help reduce traffic speeds and, in contrast with stop signs, allow cyclists to maintain momentum along a route.
- Reversed stop signs to favour the through-movement of cyclists.
- Full and partial street closures to allow bicycle-only access and help reduce motor vehicle volumes.

In contrast, bicycle lanes are usually installed on streets with higher traffic volumes and are visible to more people.

Infrastructure initiatives

2002: City of Calgary Bicycle Rack Sponsorship Program started.

2005: First bike lane on 53rd Street Northwest, the most popular route for downtown-bound commuter cyclists from the northwest.

2006: First contra-flow bike lane on 9A Street Northwest.

2006: First bicycle boulevard began to evolve on 2nd Street Northwest. Includes traffic circles, full street closures, reversed stop signs and signals to help cross major streets.

2007: First downtown on-street bike route (bicycle stencils on the pavement) on 10th Avenue South.

2008: New City of Calgary Municipal Building bicycle cage built in a highly visible, convenient location at the main entrance.

2009: Calgary Perimeter Greenway announced, with construction beginning the same year. Ten kilometres built by spring 2010, additional 110 kilometres planned, as funding becomes available.

2010: First physically separated bike lane on Riverfront Avenue South was installed as a temporary measure during construction.

2010: Pedestrian and bicycle bridge (Peace Bridge) over Bow River near 8th Street West under construction; 2011 opening.

2011: St. Patrick's Island pedestrian and bicycle bridge over Bow River - design awarded with 2012 construction planned.

Table 2-2: Infrastructure improvements

Improvements	1999	2010	Notes
Multi-use pathways	400 km	712 km	
On-street bikeways	150 km	355 km	
On-street bikeways with pavement marking	0 km	27 km	12 km of bicycle lanes 15 km of marked shared lanes
Snow cleared pathways	30 km	157 km	
LRT stations with bicycle lockers	4	11	Stations outside the city centre
Bicycle lockers at LRT stations	34	130	
Transit routes with bicycle racks on buses	0	3	Pilot project underway
Park 'n' Bike Lots	0	7	Lots are located five to eight kilometres from downtown on the pathway network.
City of Calgary Municipal Building bicycle cage stalls	44	120	
Pedestrian and bicycle overpasses	89	105	

- City of Calgary Bicycle Rack Sponsorship Program installations — 600 racks installed city wide, but mostly in the city centre between 2002 and 2010.
- Sixteen new pedestrian/bicycle overpasses were built between 1999 and 2010, of which six connect to new LRT stations. Some of these were built as part of transportation infrastructure projects; some were cost-shared with developers.
- All bridge rehabilitation work ensures that current standards are met. Examples include new or widened pathways, new bicycle-height railings and ramps to supplement stairs.

2.2.4 Education and promotion

- The City of Calgary Pathway and Bikeway Map is The City's premier education tool for bicycle infrastructure. It shows pathways, on-street bikeways, bicycle parking and Park n Bike lots, and educates about etiquette, bylaws and laws. Since 1999 The City has published four Pathway and Bikeway Maps (2000–2001, 2002–2003, 2006, 2009) in hard copy, with the last two editions available online with printable, scalable maps.
- In 2010, The City of Calgary provided pathway and bikeway data to Google for inclusion in their bike route mapping and turn-by-turn directions application.
- The City has been holding Transportation Fairs, which include the promotion of cycling as a travel option, with major institutions, building owners and employers since the early 2000s.
- The annual Mayor's Environment Expo, which hosts up to 5,000 elementary school children, includes contests designed to educate students and information about the benefits of cycling.
- The City's website has a section on bicycle safety and education including the publication "On-street Cycling Safety" and information on cycling tips for children and adults, pathway and roadway laws, etiquette and cycling equipment.
- The City of Calgary has been providing basic bicycle education and helmet safety education to children and youth in after school programs and at schools.
- Calgary has participated in the National Commuter Challenge since the mid-2000s.
- The City of Calgary has a web-based employee commuter challenge, which encourages alternatives to driving alone, including cycling.

3.0 TOP CYCLING ISSUES – WHAT CALGARIANS SAID

To ensure that the Cycling Strategy reflects the needs of both current and future Calgary cyclists, an engagement strategy was developed at the direction of Council. The engagement strategy adhered to the cornerstones of The City of Calgary’s engage! policy: accountability, inclusiveness, transparency, commitment and responsiveness. External engagement began in June 2010 and was completed in March 2011. Internal engagement started in December 2010 and was completed in May 2011. Three input streams of research and engagement opportunities were created as part of the cycling strategy process — a telephone survey, an online survey and a cycling committee. The Cycling Strategy actions, identified in section 6, reflect what Calgarians said.

3.1 Public telephone survey

The City of Calgary commissioned an independent telephone survey of 750 Calgarians in September 2010. This was the first comprehensive effort to hear from Calgarians about cycling and included input from cyclists and non-cyclists alike. The sample size and quotas were established to ensure that the sample represented the Calgary population for age and gender and provides an estimated margin of error of ±3.6 within a 95% confidence interval. The survey asked about barriers to cycling. Respondents were given the opportunity to provide suggestions for what improvements might encourage them to try cycling or to cycle more often.

The results show that Calgarians want to cycle. Nineteen per cent of Calgarians already ride at least once a week, and 59 per cent said they would like to cycle more often in general (Figure 3-1).

The results show that Calgarians want to cycle. Nineteen per cent of Calgarians already ride at least once a week, and 59 per cent said they would like to cycle more often.

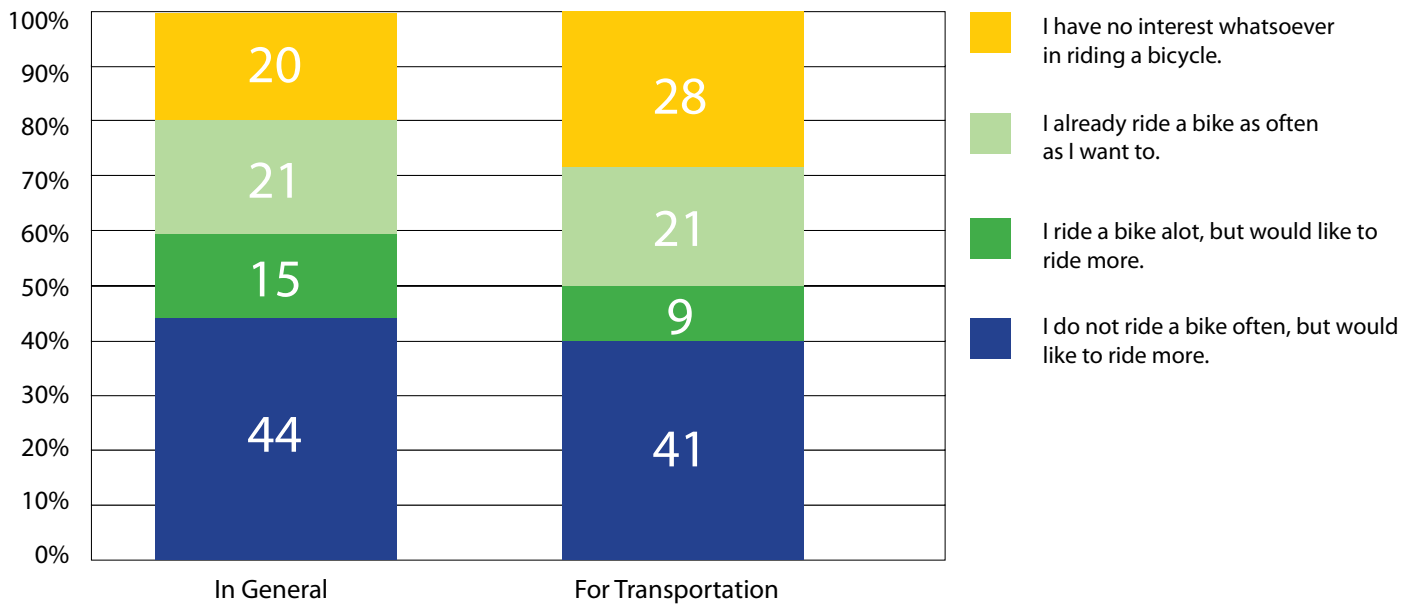


Figure 3-1: Interest in cycling

In the survey, Calgarians identified recreation as the most common purpose for cycling trips (Figure 3-2). These recreational cyclists may be more receptive to other types of cycling, especially local trips to the neighbourhood store or to visit a friend.

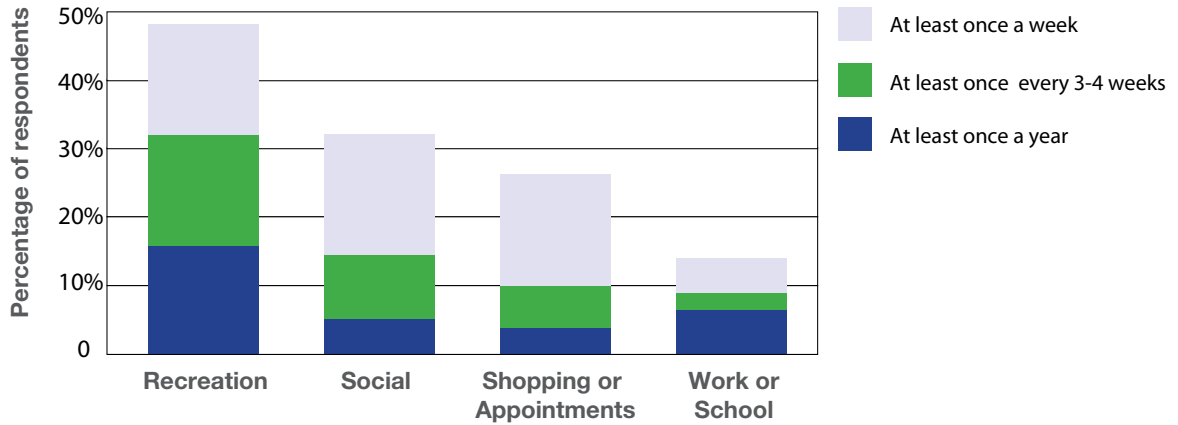


Figure 3-2: Frequency of cycling by trip purpose.

When asked about barriers to cycling, personal safety was the biggest concern (Figure 3-3). Most Calgarians who cycle feel safe cycling on pathways and quiet residential streets, and many feel comfortable on neighbourhood streets with bike lanes, even with bus traffic. The level of comfort declines significantly without bike lanes - 83% feel uncomfortable cycling on main roads.

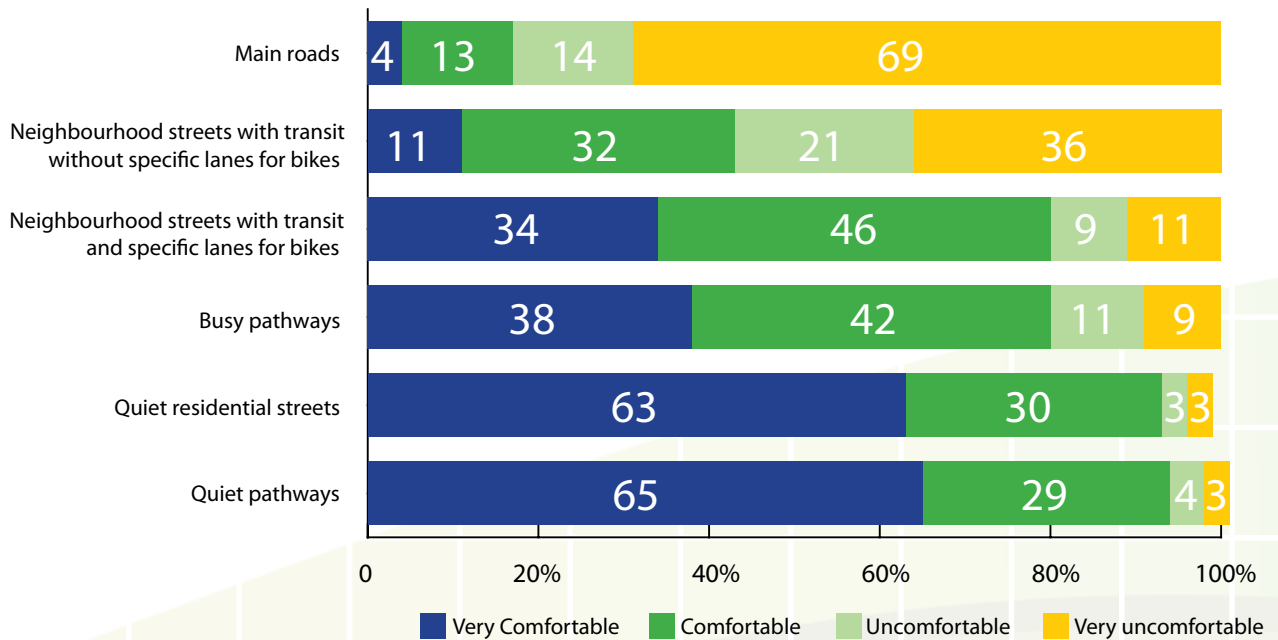


Figure 3-3: Level of comfort on various bicycle routes

While concerns about personal safety ranked highest in terms of being a barrier to cycling, other prevalent barriers include other obligations that may prevent respondents from cycling, difficulty carrying items with a bicycle, lack of showers and lockers, and the potential of the weather changing when cycling (Figure 3-4).

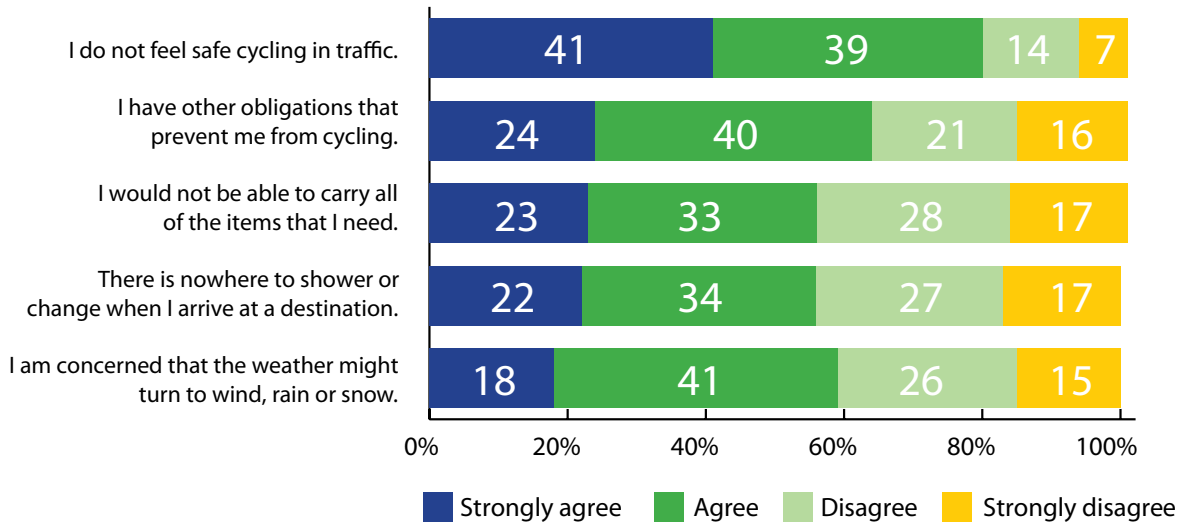


Figure 3-4: Calgary's top five barriers to cycling

3.2 Online survey

The City also commissioned an independent online survey to provide interested Calgary's with an opportunity to offer input. The online survey asked the same questions as the telephone survey but does not represent Calgary's overall population. Results showed that the respondents to the online survey are much more likely to cycle at least once a week and represent an experienced and valuable resource. They provided insight into barriers that may not occur to those who cycle less frequently.

Online respondents agreed with telephone respondents by identifying safety in traffic and a lack of shower and change facilities as top concerns (Figure 3-5). The quality and quantity of bicycle parking and the cycling network were given more importance by online respondents than by the telephone respondents, possibly because the majority of telephone respondents do not frequently cycle to a destination that requires parking.

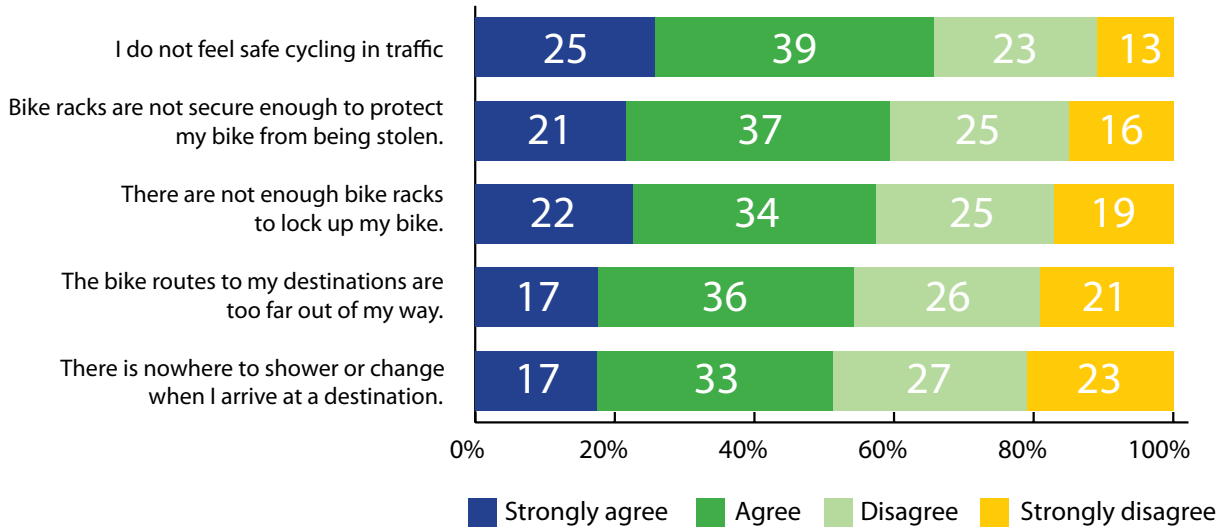


Figure 3-5: Top five barriers to cycling (online survey)

3.3 Cycling committee

The City also formed a Volunteer Cycling Committee. The committee consisted of 14 Calgarians, including nine people representing a variety of cycling skills and comfort levels, ages, cycling interests and family status.

The committee also included one youth representative and one representative from each of the following cycling organizations: the Calgary Pathway and Bikeway Advisory Council, Bike Calgary, the Elbow Valley Cycle Club and the Calgary tour de nuit Society.

The committee identified and prioritized nine areas of concern (Figure 3-6) and identified street concerns, pathway concerns, education and promotion as top priorities.



Figure 3-6: Cycling committee priorities



Mikael Colville-Andersen

4.0 TODAY'S CYCLING TRENDS AND INFLUENCERS

The bicycle has become a symbol for many different global trends, such as individual and collective images of style, fun and freedom, increased concern for the environment, increased concern for safety, more focus on health and new economic realities. Progressive cities all over Europe and North America are becoming more bicycle friendly. Copenhagen, Amsterdam, London, Paris, New York City, Montreal and Vancouver are leading the way. Calgary, as a prosperous world city, is a place with many of the same urban interests, movements and fashions as other cities. Trends and influencers in the area of cycling are examined in the following categories:

- style, fun and freedom
- health and environment
- safety for all
- economics

STYLE, FUN AND FREEDOM

There is an increase in understanding that cycling is more than just a fast way to get to work or something only done by a few to get to work. Cycling behaviour is changing around the world.

- There is an increase in urban living across the world — more than 50 per cent of the world's population now lives in cities.
- There has been an increase in people choosing to cycle in street clothes as opposed to work-out wear.
- The marketing of cycling by municipalities, transportation authorities and service providers has emphasized convenience, fun, freedom and style. Examples include the public bike share system “Bixi” in Montreal, “Vélib” in Paris, sponsored by JC Decaux, and “Barclays Cycle Hire” in London, United Kingdom, sponsored by Barclays Bank.
- “Copenhagenize” is now a verb. Wikipedia describes Copenhagenization as “a concept in urban planning and design relating to the implementation of better pedestrian facilities and segregated bicycle facilities for utility cycling in cities. Copenhagenization focuses city transport on pedestrian and cycling, rather than the car, and the concomitant benefits for street life and the natural environment, the health and fitness of citizens, and the level of amenity in cities.”
- Copenhagen Cycle Chic — a blog highlighting the style of mostly female cyclists in Copenhagen — has inspired dozens of similar websites.
- Upright-position — Euro — bikes have become more visible in Canadian cities — the first “utility cycling” bike store opened in Calgary in 2010.
- Sunday Parkway (Ciclovía) events are occurring in more cities in North America, where streets are closed and programmed for people to walk, cycle and participate in community recreation, such as dance lessons. The first such event that was widely publicized was Ciclovía in Bogotá, Colombia.
- From the 2010 survey, the second highest reason that Calgaryans cycle is because it's “fun and enjoyable.” It's also the main reason that Calgaryans cycle for social purposes, such as visiting friends and family or eating out.
- There is an increase in the number and size of cycling organizations in Calgary focussed on cycling for transportation.

SAFETY FOR ALL

- There is an increase in focus among municipalities, politicians, engineers and funding agencies to improve traffic safety by providing bicycle infrastructure. Federal funding for bicycle infrastructure is available in the United States.
- There is an increase in interest from community groups and parents to create programs and infrastructure improvements to encourage and assist children to walk or cycle to school with adults in groups called Walking Schoolbuses or Cycling Schoolbuses. In Canada, this is spearheaded by the non-profit agency Green Communities. In the United States, it is spearheaded by Safe Routes — with federal funding available for programming and route improvements.
- There is an increased understanding of greater inclusivity in cycling. That is, it is not just for younger men and athletes, but also for women, older adults and children. Non-profit organizations such as 8-80 Cities and Project for Public Spaces promote walking and cycling as activities and urban parks, trails and other public spaces as great places for people aged eight to 80.



HEALTH AND ENVIRONMENT

In response to the growing concerns about health and lower-carbon lifestyle choices, cycling is seen as a healthy alternative to auto travel.

- In Calgary, commuter cyclists consistently report exercise is the number one reason for riding to work.
- Obesity in adults and children is a major and growing concern in most developed countries. Examples of an increasing interest in healthy living and physical activity include the CBC's "Live Right Now" campaign and the United States First Lady Michelle Obama's "Let's Move!" campaign.
- "The built environment has many relationships with health outcomes. Increasing connections discovered between the built environment and health. The evidence has found connections between the built environment and physical activity, nutrition and obesity, air and noise pollution exposure, traffic crash risk, water quality, mental health and community social networks. In general, a planning and development scheme that concentrates growth and creates mixed use, pedestrian friendly neighbourhoods has been found to be associated with improved health outcomes for many of these impact areas, particularly for physical activity, obesity and associated conditions." *The Built Environment and Health: A Review*, prepared by Lawrence Frank and Co, Inc, for The City of Calgary, 2008
- Climate change is the greatest long-term challenge facing the world today. It is clear that human activity is changing the world's climate and as these changes deepen and intensify, there will be profound and rising costs to global, national and local prosperity, people's health and the natural environment.
- Individuals are increasingly motivated to make choices to respond to the predicament of climate change. Deliberate lower-carbon lifestyle choices are becoming mainstream around the world and in Calgary. Examples include renewable power generation programs, hybrid or electric vehicles, smaller homes, the "100-Mile Diet," backyard or community vegetable or fruit gardening, community-supported agriculture, farmers' markets, craft-it-yourself, do-it-yourself, recycling and reusing materials, and composting.



ECONOMICS

There is an increase in the understanding of the role cycling can play in a healthy economy.

- Cycling is a transportation choice that helps to create a liveable city—and liveable cities are better able to attract new residents. Transportation is a top issue of concern for urban professionals around the world, according to a report authored by The Economist Intelligence Unit.
- The Creative Class, a term coined by Richard Florida, Professor of Business and Creativity at the Rotman School of Management, University of Toronto, is made up of creative people who value urban living, transportation choices like cycling, a diverse population and cultural events; these individuals increase the economic success of the city, attracting more creative people, and the cycle repeats itself.
- Economic benefits of investment in pedestrian and bicycle infrastructure:
 - In the 2008 report *Active Transportation for America: The Case for Increased Federal Investment in Bicycle and Walking*, by Rails-to-Trails Conservancy, increased active transportation in the United States could provide a benefit of between US \$10 billion and \$66 billion per year in the areas of physical activity, CO₂ emission reductions, fuel savings and avoided driving.
 - An article in the January 2011 issue of the *Journal of Physical Activity and Health* looked at the costs and benefits of bicycle investment in Portland, Oregon, and found that “In Portland, Oregon, by 2040, investments in the range of \$138 to \$605 million will result in health care cost savings of \$388 to \$594 million, fuel savings of \$143 to \$218 million, and savings in value of statistical lives of \$7 to \$12 billion. The benefit-cost ratios for health care and fuel savings are between 3.8 and 1.2 to 1, and an order of magnitude larger when value of statistical lives is used.”
- Cycling is a growing economic force, providing a green industry that benefits the local economy. In Portland, Oregon, for example, total economic activity in 2006 was estimated at \$63 million in the areas of tours, races, rides and events, distribution and manufacturing, professional services and retail, with an estimated 600 to 800 jobs.
- Compared to using a car for a year, it could be less expensive to bike for most trips and rent a car for the times that you need one. You can save between \$11,000 and \$14,000 a year by owning one less car or minivan. (Source: *Canadian Automobile Association*)

5.0 BEST PRACTICES FROM OTHER CITIES

Calgary can learn from other cities' best practices in the areas of bicycle facilities, education and promotion, speed of implementation, integrated regional planning with transit and programs and maintenance. An instructive comparison of cycling best practices in leading world cities was presented in the March 2011 paper "Analysis of Bicycle Trends and Policies in Large North American Cities: Lessons for New York," by John Pucher and Ralph Buehler. The paper was published by The Region 2 University Transportation Research Center, which is located at the CUNY Institute for Transportation Systems at The City College of New York. The following section identifies cycling initiatives and best practices from Copenhagen, as well as leading Canadian and American cities, many of them discussed in that paper.



5.1 Copenhagen, Denmark

Copenhagen calls itself the "City of Cyclists" and is in a constant but friendly battle with Amsterdam for the title. Copenhagen has a bicycle culture that has permeated all ages and both genders. Cycling is an integral part of the city's life thanks to the sustained effort of municipal resources and policies that have continually improved bicycle infrastructure and bicycling conditions since the 1960s. As evidence of the popularity of cycling, the bicycle modal share to work and place of education has grown to 37 per cent. Commuters indicate speed and ease as their main reasons for travelling by bicycle.

Bicycle facilities:

- Cycle tracks (physically separated from traffic and pedestrians).
- Bicycle traffic signals and "green wave" for cyclists.
- Travel lane and street parking space reallocated to bicycles.
- Real-time bicycle counter device in a highly visible location.



5.2 New York City, New York, USA

"New York ... has been especially innovative in its use of cycle tracks, buffered bike lanes, bike traffic signals, bike boxes, and sharrowed streets." - Pucher and Buehler

New York City has made quick progress to improve bicycle infrastructure. After the publication of a ten-year bicycle safety review in 2006, the municipality dedicated new staff and additional funding to achieve ambitious targets for improved safety through better cycling conditions. As a result, 200 miles of new on-street routes were added to the bicycle network between 2007 and 2009, resulting in a total of 620 lane miles of bicycle routes—the longest network in the United States. The city's screenline counts of bicycles entering and leaving the Manhattan core indicate that regular cycling doubled from 2006 to 2010. Even so, at 0.4%, the bicycle commuting mode share has room to grow.

Bicycle facilities:

- Physically separated and buffered bicycle lanes.
- Bicycle traffic signals.
- Travel lane space reallocated to bicycles.

Promotion:

- Bike Month — free events in collaboration with a community bicycle group.
- Summer Streets (a bicycle and recreation street festival).
- Guided rides.
- Community bicycle groups.



Brian Green



www.pedbikeimages.org / Carl Sundstrom

5.3 Montreal, Quebec, Canada

*“Montreal has North America’s largest and oldest network of cycle tracks as well as the largest bike sharing system.”
- Pucher and Buehler*

The City invested \$25 million between 2008 and 2010 to add 100 kilometres of bicycle paths and lanes to the existing network, resulting in a bike network of 535 kilometres. In 2009, a public bike share program was launched and celebrated its one-millionth ride on October 26, 2009 after only five months of operation. In addition, the city has added bicycle parking stands that provide space for 2,000 bicycles and clears snow from 35 kilometres of bike routes during winter months. Montreal has a bicycle commuting modal share of 2.4%.

Bicycle facilities

- Seasonal public bike share with 400 stations and 5,000 bicycles.
- Seasonal separation of bicycle lanes.

5.4 Vancouver, British Columbia, Canada

“Vancouver has been a model of traffic calming, bike boulevards, and bike-transit integration.” - Pucher and Buehler

Thanks to its integrated approach to regional transit and bicycle route planning, Vancouver boasts a variety of bicycle facilities and the continent’s most extensive bicycle boulevard network, providing 139 kilometres of routes. Bicycles are welcome on public transit services, including buses, light rail transit, trains and ferries. For a Canadian city, Vancouver has a significant bicycle modal share of 3.7%.

Bicycle facilities

- Bicycle boulevards/neighbourhood greenways.
- Bicycle lanes.
- Physically separated and buffered bicycle lanes.



5.5 Portland, Oregon, USA

“Portland does almost everything, but it is most notable for its bike boulevards, dense bikeway network, innovative bike corrals, large number of cycling events, and lively bike culture.” Pucher and Buehler

Portland is a North American leader in piloting innovative bicycle facilities, starting with bicycle boulevards or neighbourhood greenways and continuing with coloured bicycle lanes and cycle tracks. As a real-time demonstration laboratory, the city is the site of the only week-long pedestrian and bicycle design training intensive offered by a post-secondary institution in Canada and the United States. Portland has the highest bicycle commuting mode share of the large cities in the United States, estimated at 5.8 per cent in 2009 and measured at 3.9 per cent in 2007.

Bicycle facilities

- Coloured bicycle lanes and coloured bicycle boxes.
- Bicycle boulevards/neighbourhood greenways.
- Bicycle traffic signal.
- Buffered bicycle lanes.

Promotion

- Sunday Parkways.
- Bicycle clinics and guided rides, including sessions just for women.
- Public brown bag lunch talks.
- Community bicycle groups.

5.6 Minneapolis, Minnesota, USA

“Minneapolis has an extensive system of off-street bike paths, the most bike parking per capita of any city [in North America], and offers an impressive adaptation of cycling to cold, snowy winters.” Pucher and Buehler

Education and promotion

- Bicycle Walk Ambassador Program, with four full-time staff to educate people on how to bicycle and walk more, and drive less.
- Guaranteed Ride Home Program vouchers for transit or taxi.

Bicycle facilities

- Bicycle lanes and bicycle paths.
- Bicycle sharing program: 700 bicycles at 65 kiosks downtown, at the University of Minnesota and nearby commercial areas.
- All Metro Transit buses and trains have bicycle racks.
- Grand Rounds National Scenic Byway which almost encircles the entire city.

Maintenance

- All off-street bicycle paths are ploughed within 24 hours of the end of a snowfall.



5.7 Chicago, Illinois, USA

“Chicago has led the way in bike-transit integration, bike parking, community outreach, and enforcement of cyclist rights.” Pucher and Buehler

Bicycle facilities

McDonald’s Cycle Center at Millennium Park, a highly-visible central location, is the largest bicycle commuting centre in the United States. It has 300 secure bicycle parking spaces, showers, lockers, bicycle rentals and tours centre, and a bicycle repair shop.

Education and promotion

- Online videos for Transit/Bicycle rules and responsibilities.
- Online videos for Traffic Enforcement for Bicycle Safety.

5.8 Edmonton, Alberta, Canada

Our sister city in Alberta boasts about the same bicycle modal share as Calgary and some of the same challenges. Edmonton has been successful in the education and promotion of cycling, specifically supporting the Bikeology Festival – Edmonton’s Festival of Cycling Culture.

The 2009 CYCLE EDMONTON: Bicycle Transportation Plan proposes 489 kilometres of bicycle route improvements over 10 years at a cost of approximately \$10 million per year.

Bicycle facilities

- Shared lanes.
- Bicycle lanes.
- Pathways and trails.

Promotion

- Support of Bikeology Festival.

6.0 IMPLEMENTATION STRATEGY

To become a bicycle-friendly city, The City needs to focus its efforts on key actions in the next three years. New actions identified in this section are based on the telephone and online surveys, input from the cycling committee, a review of best practices from other cities and discussions with City staff responsible for implementing the actions. Combining these new actions with our current practices will move Calgary towards becoming one of the premier cycling cities in North America (Figure 6-1).

Vision:

To become one of the premier cycling cities in North America.

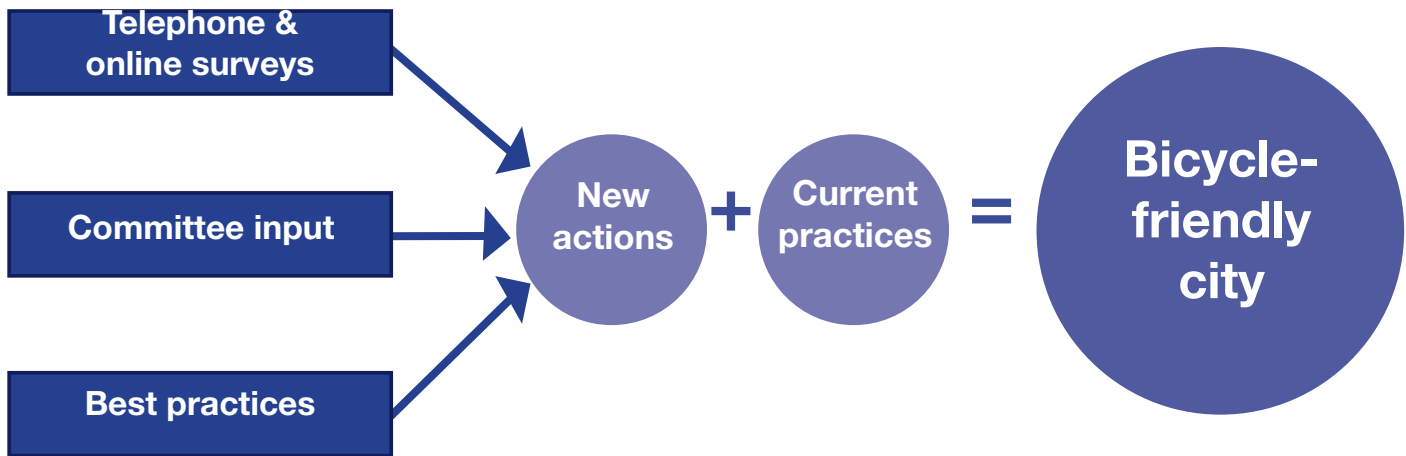


Figure 6-1: Implementation strategy

The Calgary audience for cycling

Calgarians can be grouped into four categories of cyclists: fearless, confident, interested and reluctant. Descriptions of each category are summarized in Figure 6-2.

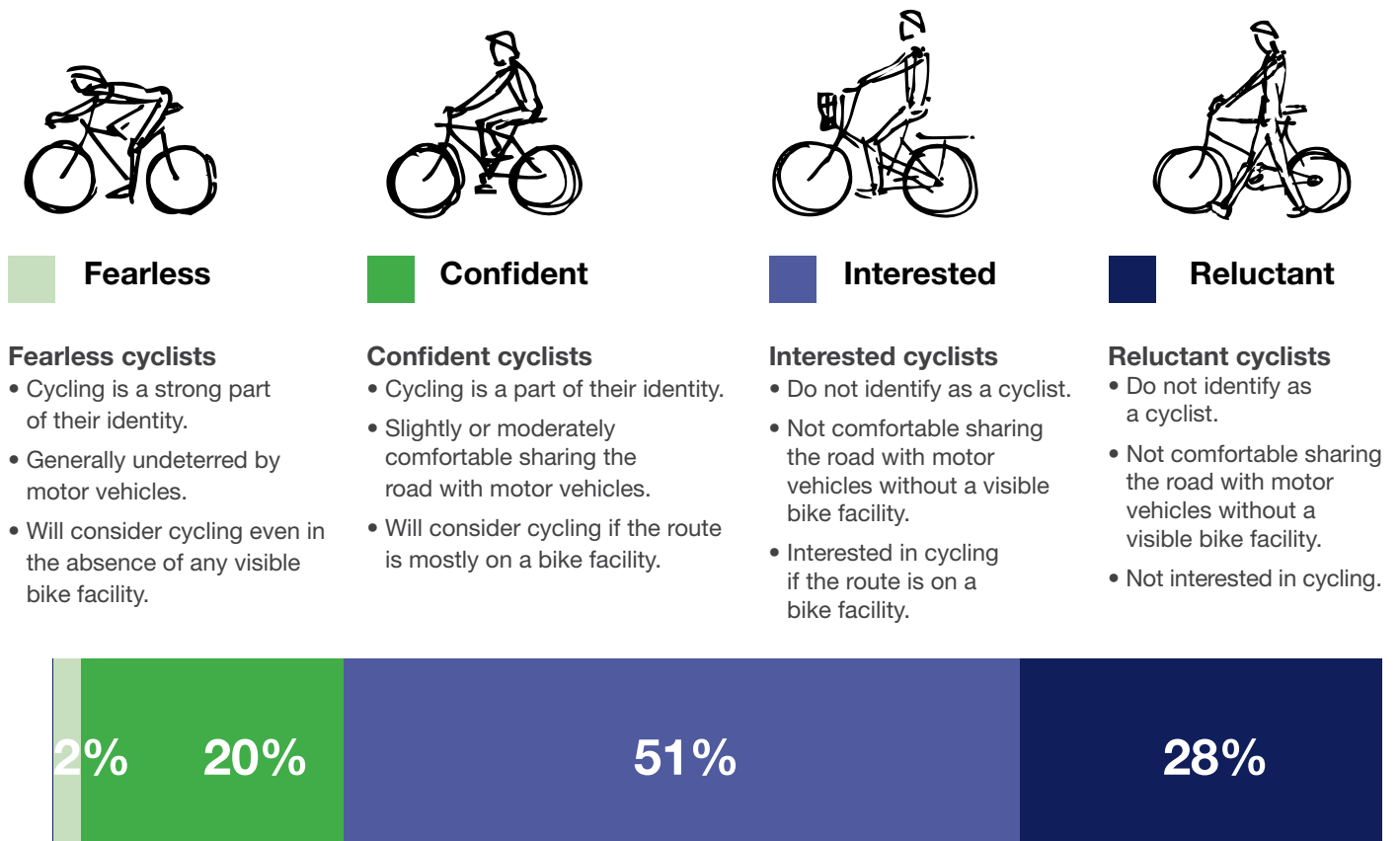


Figure 6-2: Categories of Calgary cyclists. Source: The City of Calgary Cycling Strategy Research Public Telephone Survey 2011

The fearless and reluctant cyclist have entrenched cycling identities unlikely to change in response to City initiatives. These groups make up only 30 per cent of the surveyed population.

In contrast, the confident and interested cyclists make up 70 per cent of survey respondents. They are not comfortable sharing the road with traffic and want dedicated bicycle facilities. In addition, one-fifth of Calgarians already ride at least once a week — and most Calgarians want to cycle more (Section 3.1).

The City needs to start planning for the confident and interested groups to get more people cycling.

The City's approach

Based on the results of the engagement process and The City's priorities, an action plan has been developed and organized into the three pillars needed to support a bicycle-friendly city (Figure 6-3).

Pillar One: Plan, design and build.

- o Provide dedicated space on streets to help Calgarians feel safer and more bicycle parking to make it more convenient to lock up a bicycle. Focus on areas where the largest gains in bicycle volumes (counts) can be realized.

Pillar Two: Operate and maintain.

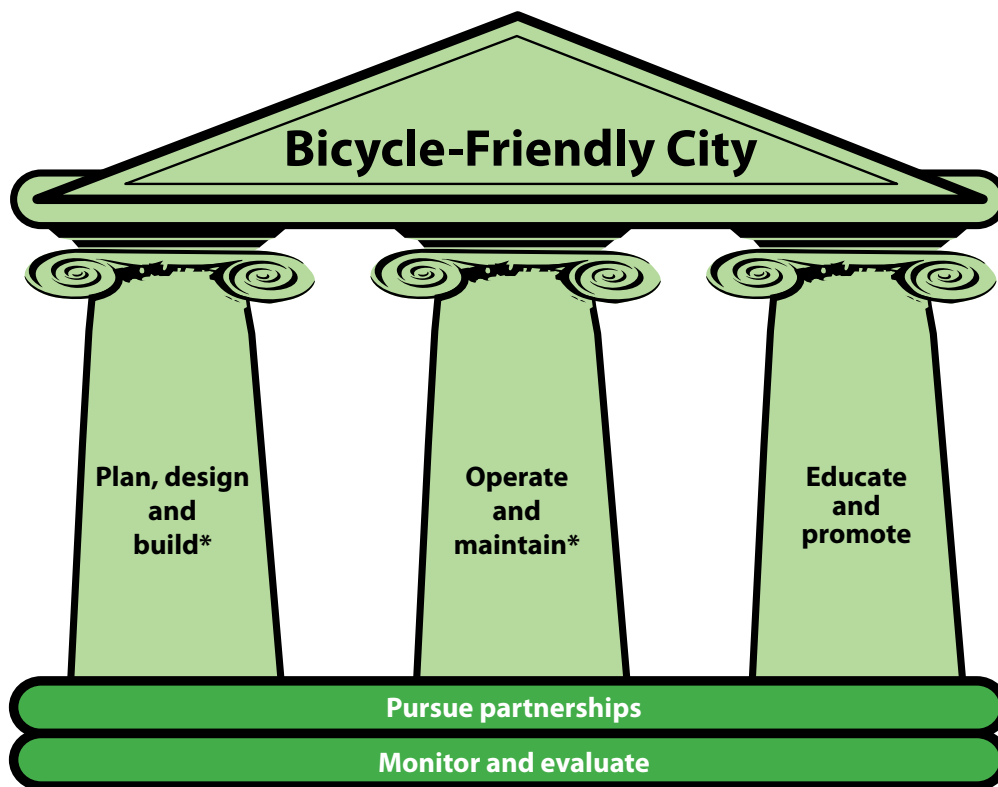
- o Provide enhanced operation and maintenance services to make cycling safe, comfortable and practical. Focus on areas with the largest bicycle volumes (counts).

Pillar Three: Educate and promote.

- o Develop and deliver a comprehensive bicycle education and promotion program.

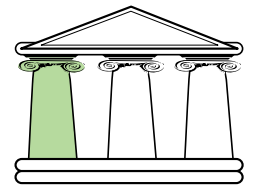
Each of the three pillars is comprised of a set of actions needed in the next three years and beyond to support Calgary's transition to a more bicycle-friendly city. While some actions can be accomplished with existing staff and resources, others will require more funding. The City will also pursue strategic partnerships.

The Strategy contains 50 actions for The City to undertake in the 2012-2014 business plan and budget cycle. The City will need to sustain about half of those actions after 2014 and schedule future actions in the 2015-2017 business plan and budget cycle. Some actions identified in The Strategy are related to multi-use pathways and are part of the Pathway Safety Review.



** Focus on enhanced bicycle level of service in high use/high growth areas.*

Figure 6-3: Pillars of a bicycle-friendly city



6.1 Pillar One: Plan, design and build bicycle infrastructure

Most Calgarians are interested in cycling more often (section 3.1). While very satisfied with cycling conditions on multi-use pathways, Calgarians would like to see improvements to other bicycle infrastructure on streets, bicycle amenities and opportunities to combine their trip with transit. Over eighty per cent of Calgarians said that dedicated space for cycling—such as bicycle lanes next to or physically separated from moving traffic—would help them feel safer while cycling on streets. Calgarians said that more showers, lockers, bicycle racks and bicycle repair facilities at their destinations would make it easier to cycle. Lastly, Calgarians were concerned about the weather turning to wind, rain or snow; the indirectness of bicycle routes; and the duration of bicycle trips. These concerns could be addressed through better integration between cycling and transit.

To address Calgarians' concerns about bicycle infrastructure, the actions in Pillar One are grouped into three categories: planning and design tools, focussing resources and providing amenities.

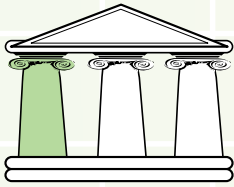
6.1.1 Planning and design tools for bicycle routes

The first category of actions in Pillar One is about the tools that will be needed to achieve the other actions related to bicycle infrastructure. To be efficient with resources, The City needs tools to help plan, build, operate, maintain and monitor bicycle infrastructure. These tools include mapping information, guidance for on-street bicycle route designs and changes to multi-use pathway designs (Table 6-1).

Calgarians said:

They don't feel safe cycling in traffic (80 per cent).

Dedicated bicycle space is needed to encourage Calgarians to cycle more often. Requested infrastructure includes: bicycle-only lanes that run alongside a road but are physically separated from both cars and pedestrians (88 per cent) and bicycle lanes (83 per cent).



Background Infrastructure, route and mapping information

The first comprehensive planning tool for Calgary's integrated pathway and bikeway network was the 2001 Pathway and Bikeway Implementation Plan Map. It includes existing routes and identifies missing links in the network. It has been instrumental in identifying the location of City projects, such as missing pathway links, and in planning pathway and on-street bikeway routes in new communities. A new Pathway and Bikeway Implementation Plan needs to be created, with stakeholder engagement to begin in 2012.

Other bicycle-related City electronic resources include the bikeway Geographical Information System (GIS) layer and the bicycle rack inventory GIS layer. Both need to be updated regularly to efficiently represent, plan and monitor the bicycle network and associated infrastructure.

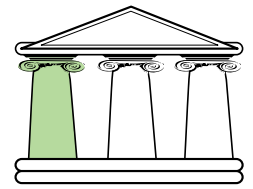
Connectivity Handbook

Connectivity describes the variety of route choices available for people to get from one place to another — by foot, bicycle, transit or car. Within residential communities or Activity Centres, all of this movement happens on the local transportation network, on regional streets, residential streets (collectors, local streets and alleys), pathways and walkways. These elements can be combined into a variety of patterns and have a significant impact on how people choose to travel and how long their trips take.

When developers produce a plan for the design of a new community, The City now requires quantitative measures to demonstrate the degree of connectivity for pedestrians and cyclists (CTP policy 3.8a). The calculations can be done using an Active Mode Connectivity Index for walking and cycling connectivity and a Street Connectivity Index for the street network. The Connectivity Handbook, available online, provides guidance on the connectivity requirements for Active Modes and for Streets.

Complete Streets

The City is creating a Complete Streets Guide, which was identified in the CTP. The Complete Streets Guide aims to increase the attractiveness, convenience and safety of all modes of transportation by creating a new selection of multi-modal streets that emphasize walking, cycling and transit, incorporate elements of green infrastructure, provide universal accessibility and function in the context of surrounding land uses. The final Guide is expected in 2012.



Calgary Bicycle Design Guide

A bicycle design guide will allow The City to quickly design and implement innovative improvements to bicycle routes. It is needed to address Calgarians' top concern about feeling unsafe cycling in traffic. The bicycle design guide will explore innovative facility designs, such as those that separate cyclists from both traffic and pedestrians, and adapt them to Calgary's context. The bicycle design guide would serve as an input to the Complete Streets Guide.

In addition, The City is seeking appropriate locations to plan, design and build bicycle pilot projects, such as cycle tracks and bicycle boxes.

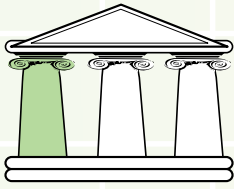
The City has made progress over the years with respect to street design and consideration for bicycles. For example, The City has installed bicycle boulevards and bicycle lanes (section 2.2.3) and catch basins are now designed to be bicycle-friendly to prevent wheels getting caught.

National design guidance

In addition to developing a Calgary guide for more innovative bicycle facilities, The City will approach the Transportation Association of Canada (TAC) to develop a more comprehensive bicycle design guide for Canada that incorporates some of the innovative designs mentioned previously. The City relies on the bicycle design guide produced by TAC to plan and design on-street bicycle routes. The guide, while helpful for bicycle lanes and shared lanes, does not reflect some of the more innovative bicycle design treatments, such as cycle tracks or separated bicycle facilities common in Europe and increasingly visible in bicycle-friendly cities in North America.

Calgarians said:

Dedicated bicycle space is needed to encourage Calgarians to cycle more often. Requested infrastructure includes separate pathways for cyclists and for pedestrians (86 per cent) and multi-use pathways (81 per cent).



Provincial and municipal legislation

Certain sections of Alberta legislation do not support some of the innovative bicycle facility designs, such as separate bicycle facilities, that are commonplace in other bicycle-friendly cities. As such, The City needs to identify changes to legislation that will support the types of innovative bicycle facilities that Calgarians expect. The City will work with the Province and other municipalities in Alberta to determine the appropriate changes. For completeness, Calgary's bylaws that affect cycling should be reviewed to determine if any changes could make cycling easier for more people. The Calgary Streets Bylaw 20M88 or Traffic Bylaw 26M96, for example, could specify a penalty for parking in a bicycle lane.

Multi-use pathway design

In general, Calgarians feel safe on cycling on pathways. However, there is some concern that older pathways are too narrow and some agreement that widening and twinning some pathways would make them safer. Design considerations for cyclists can improve the atmosphere for all Calgarians on the pathways.

Pathways often cross barriers on bridges or underpasses shared with traffic. To promote a safe environment, The City is currently updating its Guidelines for Bridges and Structures to include principles and design guidelines for safe pedestrian and bicycle underpasses. The revisions will match the principles used in the planning and design of pedestrian and bicycle overpasses and road structures.

Calgarians said:

Between 92 per cent and 97 per cent of cyclists who use pathways feel safe on the pathways in general.

Between 35 per cent and 38 per cent believe that twinning pathways will make them safer, and between 14 per cent and 29 per cent think that widening pathways will make them safer.

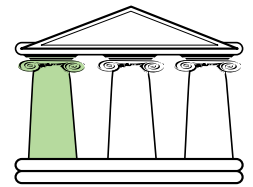


Table 6-1 Planning and design tools – actions

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C1	Engage key stakeholders in creating a new Pathway and Parkway Implementation Plan.	→	→		✓	
C2	Update Calgary’s bikeway GIS layer information regularly.	→	→			
C3	Migrate the bikeway GIS layer into TransNET (a graphical representation of Calgary streets).				✓	
C4	Develop a bicycle design guide for Calgary. This will provide guidance for the inclusion of cycling facilities into the Complete Streets Guide.				✓	
C5	Plan, design and build priority pilot projects including cycle tracks and bike boxes.			✓		
C6	Support the development of an updated national bicycle design guide.	→	→		✓	
C7	Review and suggest changes to municipal bylaws to support cycling and bicycle facility design.	→	→			
C8	Review and suggest changes to provincial laws to support cycling and bicycle facility design.	→	→			

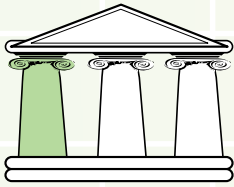
Pathway Safety Review recommendations

Develop design options for twinning pathways (separate “wheels” from “heels”).

Increase minimum width on local pathways from 2.0 to 2.5 metres.

Enhance consistency on planning, design approval and inspections in regards to the 1 metre safety clearance and setback requirements. In the few cases where this can’t be achieved, review the hazard and determine mitigation measures.

Create a lighting policy for pathways.



6.1.2 Plan and build bicycle infrastructure

The second category of actions in Pillar One is about the strategic direction of resources needed to improve bicycle infrastructure in Calgary. Resources will be focussed on areas where a large number of cyclists are present and where the largest increases in cycling volumes (counts) can be expected (Table 6-2).

Background

The Activity Centres and the city centre, which are transit-supportive, mixed-use areas identified in the MDP, are the two key areas of focus. At the same time, the integration of cycling with transit in high-use, high growth areas can be improved by providing bicycle routes to transit hubs, providing bicycle parking at transit hubs and accommodating bicycles on Calgary Transit vehicles. Lastly, cycling connectivity to areas of high activity and high growth can be improved through development, planning and retrofit projects.

Activity centres: northwest and city centre

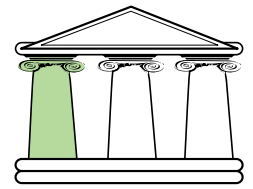
The City started bicycle route improvements in 2010, and will finish them in 2012 in the University of Calgary Major Activity Centre area. In 2009, The Brentwood Station Area Mobility Assessment and Plan and the University of Calgary Area Pedestrian and Bicycle Improvement Project were approved for implementation. These projects are squarely in a Major Activity Centre that encompasses institutions, hospitals, retail, transit hubs and residences, making it an ideal place to concentrate bicycle improvements.

The city centre is considered Calgary's premium Major Activity Centre because it has the highest concentration of employment and residences. Committed cyclists have long pointed out the lack of dedicated bicycle space in this area. After the Centre City Plan was approved in 2007, the Centre City Mobility Plan was developed. It provides additional guidance and identifies a bicycle network in the Centre City. By 2014, The City expects to complete the network of routes as shown in Appendix A. The interconnected network of on-street bicycle routes will compliment the multi-use pathway system already in place along the northern and eastern edges of the city centre.

Public bike share system in the city centre

As The City improves the network of bicycle routes in the city centre, an initial public bike share system is recommended before the end of 2013. A public bike share system is a service that responds to the needs of trips almost long enough for a public transit bus ride but perhaps too short for a taxi ride. It consists of a network of bicycle stations that are closely spaced and placed in strategic locations for ease of use. After registering or providing a small deposit, riders can pick up a bicycle from one docking station and, when finished, drop it off at another.

Where already implemented in other cities (section 5.0), a public bike share system has been a successful amenity to attract people who don't normally cycle to try it, and will be a significant tool to promote cycling amongst Calgarians and tourists alike. The rider can be spontaneous in choosing to cycle — there is no need for special clothing or gear, or to leave extra time to find a secure bicycle parking spot — which further reduces barriers and makes cycling more accessible to more people.



Calgarians said: **Integrating bicycles with public transit**

There is a lack of integration between cycling and transit, whether it is routes planned to stations or bike racks on buses. They were concerned that the weather would turn to wind, rain or snow (59 per cent).

Bike routes to destinations are too far out of the way (52 per cent).

Cycling takes too long to get places (49 per cent).

Bicycle-friendly transit creates a multi-modal option that complements both transit and cycling. The use of transit for part of a bicycle trip can reduce the impact of distance, bridge a gap in the cycling network, or mitigate inclement weather. At the same time, a bicycle can improve access to the transit network, reduce demand for amenities such as feeder bus routes to major transit hubs and parking spaces at Park 'n' Ride lots, and increase ridership on weekends, at midday and in counter-flow directions.

There are two main ways to integrate bicycles and transit:

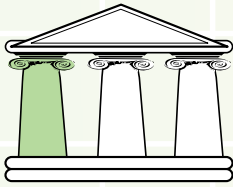
- Provide bicycle routes to, and bicycle parking at, transit hubs.
- Accommodate bicycles on transit vehicles (trains and buses).

Bicycle routes to and bicycle parking at transit hubs

Based on current international research, the most important aspects to creating bicycle-friendly transit are improving the routes to transit hubs and improving bicycle parking (both short-stay racks and secure stalls).

The planning process for new transit hubs has been evolving to better accommodate cyclists getting to and from the station area via multi-use pathways and on-street bikeways. Stations now include bicycle racks and bicycle lockers on opening day, and generally have space set aside to expand the bicycle parking as demand increases. The current bicycle locker rental system at LRT stations (with more than 130 lockers at 11 stations) is marketed to attract cyclists to sign up for monthly rental terms and achieve more effective use of the lockers.

The City plans to improve bicycle routes to the West LRT stations and to develop a new secure bicycle parking scheme to make bicycle parking more convenient and more accessible to more people. Plans call for the improvements to be in place by the time West LRT opens at the end of 2012.



The Northeast LRT extension to Saddle Ridge, scheduled to open in 2012, and the Northwest LRT extension to Rocky Ridge/Royal Oak and Tuscany, scheduled for opening in 2014, will be reviewed to determine if additional bicycle route improvements to the stations are required.

As The City develops plans for other transit hubs, such as those along the Southeast Transitways and Bus Rapid Transit (BRT) Network, bicycle routes to and from the station will be included in the project scope from the beginning of the project.

Bicycles on Calgary Transit vehicles

Bicycles are allowed on trains during off-peak hours and this policy is not expected to change soon. Presently, bicycles cannot be brought onto buses and the majority of the bus fleet is not equipped to transport bicycles. Calgary Transit is conducting a pilot of the use of bicycle racks on every bus on three transit routes. The pilot will be evaluated in the fall of 2011, at which point Calgary Transit will recommend actions moving forward.

Coordination with major projects

The City undertakes several major construction projects every year, including building missing pathway links, new pedestrian overpasses, major roads projects and interchanges, bridge rehabilitation and asphalt overlay of existing streets. The planning process for new major projects has been evolving to better consider and provide connections for cyclists, whether it is building multi-use pathways as part of new infrastructure or adding a bicycle height railing on a bridge during rehabilitation. The creation of a Bicycle Design Guide and the Complete Streets Guide (section 6.1.1) will provide City staff and the development industry with the tools to better incorporate bicycle improvements into projects.

Upcoming projects will be aligned with CTP/MDP goals and include improved bicycle routes on the Primary Cycling Network, within Activity Centres and Nodes and along Corridors.

The CTP defines the Primary Cycling Network as connecting “major destinations such as Activity Centres, corridors and major institutions. Connections will be as direct as possible, making cycling between these locations direct and expedient, while also safe and appealing.”

Other projects that will help improve connectivity include retrofitting existing signals with the ability to detect bicycles and exploring the feasibility of including pathways next to existing LRT or BRT right-of-way, and protecting for pathways by including them in functional and land use plans.

The CTP defines the Primary Cycling Network as connecting “major destinations such as Activity Centres, corridors and major institutions. Connections will be as direct as possible, making cycling between these locations direct and expedient, while also safe and appealing.”

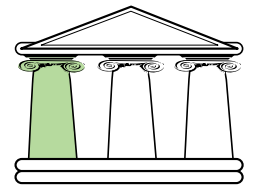
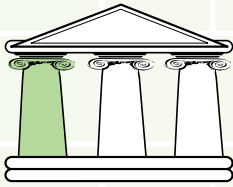


Table 6-2 Plan and build bicycle infrastructure - actions

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C9	Complete short-term bicycle route improvements as identified in the University of Calgary Area Pedestrian and Bicycle Improvement Project and the Brentwood Station Area Mobility Assessment and Plan.	—		✓		
C10	Improve bicycle routes in the city centre based on the Centre City Action Plan Map (Appendix A).	→		✓		
C11	Implement a public bike share system in the Centre City.	→	→	✓	✓	✓
C12	Plan and implement bicycle route improvements to stations along the West LRT line.	—		✓		
C13	Explore the creation of a new secure bicycle parking scheme at LRT stations along the West LRT line.	—		✓		
C14	Plan and implement bicycle route improvements to Saddle Ridge LRT station.	—		✓		
C15	Plan and implement bicycle route improvements to Rocky Ridge / Royal Oak and Tuscany LRT station.	—		✓		
C16	Plan improvements to bicycle routes in conjunction with new transit hubs (e.g. Southeast Transitways and BRT Network)	→	→	✓		
C17	Plan improvements to bicycle routes in conjunction with CTP/MDP-aligned work in Activity Centres, Nodes, and Corridors.	→	→	✓		
C18	Continue to build bicycle route missing links.	→	→	✓		
C19	Develop a plan and retrofit selected signals with the ability to detect bicycles.	—		✓		
C20	Explore the feasibility to include pathways next to existing LRT or BRT right-of-way and protect for pathways next to future LRT or BRT right-of-way by including them in functional and land use plans.	→	→			



6.1.3 Provide bicycle amenities

The third category of action in Pillar One is about the amenities that cyclists need at the end of their trip (Table 6-3). Bicycle amenities typically include bicycle racks or secure bicycle parking facilities, lockers, showers and change rooms.

Background

The City currently works with interested building owners and operators to provide and expand bicycle parking options in existing buildings. New developments must provide the bicycle parking types and quantity described in the Land Use Bylaw. To set a corporate example, new Calgary Parking Authority public parkades in the downtown will have bicycle parking.

Bicycle Rack Sponsorship Program

The City's city-wide bicycle rack installation program provides and sets up bicycle racks on public land (typically road right-of-way) at the request of Calgarians via 3-1-1. Through this program, The City installed 600 racks, mostly in the city centre, between 2002 and 2010. Property developers, owners and operators added their own racks on private property.

The Land Use Bylaw and the Bicycle Parking Handbook

The City's Land Use Bylaw requires bicycle parking, both secure and short-stay, in new buildings. As The City updates the Land Use Bylaw to address districts such as the Downtown and Chinatown, requirements for bicycle parking will be added.

The City needs to revise its Bicycle Parking Handbook to provide additional guidance on the quality and quantity of bicycle parking, locker rooms and shower facilities provided in developments, such as new privately-owned buildings, parks, transit hubs, and regional shopping centres. The Bicycle Parking Handbook has been used as a resource manual for architects, engineers, planners and developers for both public and private developments for approximately six years. It incorporates examples of best practices as well as guidance for bicycle facilities and is Calgary-specific.

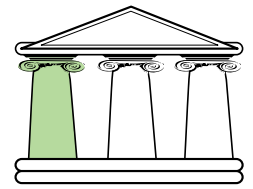
Calgarians said:

There is a lack of showers and lockers at destinations (56 per cent).

There is a lack of bicycle racks where they can lock their bicycle (54 per cent).

There is a lack of storage for personal items at their destination (53 per cent).

Bicycle racks are not secure enough to protect their bicycle from being stolen (50 per cent).



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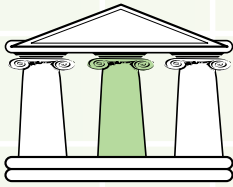
Bicycle stations

Bicycle stations can address several of the barriers identified by survey respondents. Bicycle stations usually have secure bicycle parking and could have any combination of the following items: lockers, showers, repair facilities, bicycle resources, coffee shop, bike rentals, or tourism information.

Developing a strategy for implementing bicycle stations in Calgary, specifically in the city centre, is important to further reducing barriers to cycling. This might mean opportunities to partner with existing providers, such as gyms that already have showers and lockers, but no bike parking; exploring City projects that are being re-purposed, such as the Science Centre; or even building the concept into new developments. Bicycle stations in other recognized bicycle-friendly cities are often associated with transit hubs. Locations in Calgary might include key entrances to the city centre and along the LRT free fare zone for easy access to other areas of the city centre.

Table 6-3 Provide bicycle amenities – actions

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C21	Continue to offer and further promote the Bicycle Rack Sponsorship Program, to install bicycle racks on public land at the request of Calgarians.	→	→	✓		
C22	Require showers and lockers for cyclists in employment intensive areas in new buildings.	—				
C23	Update The City's Bicycle Parking Handbook for the implementation of bicycle amenities such as bicycle parking, lockers and showers.	—				
C24	Develop strategies for implementing bicycle stations in Calgary.	—		✓	✓	✓
C25	Explore ways in which to support and promote bicycle-related programs and services delivered by others.	→	→			



Mikael Colville-Andersen

6.2 Pillar Two: Operate and maintain bicycle infrastructure

More than three quarters of Calgarians surveyed by telephone said that the increased surface maintenance of on-street bikeways and pathways, such as gravel-clearing and snow-clearing, would encourage them to cycle more. Table 6-4 contains the actions related to improving bicycle infrastructure operation and maintenance.

Background

A smooth surface is important for the comfort and safety of cyclists, as most bicycles have little suspension and tires inflated to high pressure. If the street or pathway surface condition is poor, or if potholes, gravel or snow is found close to the curb, which is where cyclists are supposed to ride according to provincial law, cyclists can find themselves at risk of falling or having to ride farther away from the curb and uncomfortably closer to motor vehicle traffic.

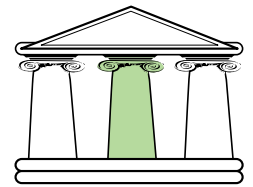
On-street gravel-sweeping and snow and ice control

The City will identify high-use bicycle routes and create a new level of gravel-sweeping and snow and ice control service for them.

This new level of service will require additional resources, but is necessary in order to support cycling as a safe and convenient choice of travel for Calgarians.

The gravel-sweeping of on-street bikeways takes place throughout the winter and before spring clean-up, weather permitting. Gravel-clearing early in the spring, at the beginning of the cycling season for most Calgarians, is particularly important in providing a safe environment on streets and should be monitored for efficiency and success.

Snow-clearing currently occurs on high-volume portions of the pathway system, but there is no dedicated service to clearing snow from high-use on-street bicycle routes. Parking bans to move snow further to the curb and out of the path of cyclists should be considered. Snow should be cleared from key streets in a timely manner to prevent ice from forming. In addition, streets that have bicycle pavement marking, such as bicycle lanes and marked shared lanes, will be considered a Priority 2 for plowing, sanding and salting in The City's Snow and Ice Control Policy. Even when routes are plowed, snow builds up, especially on the driver's side of parked cars.



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On-street repairs

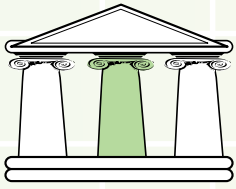
To address potential obstacles to cycling at the curbside, The City repairs potholes in response to 3-1-1 requests and site inspections. During scheduled roadwork, The City also replaces catch-basins with ones that are more bicycle friendly.

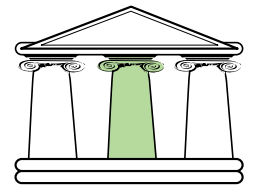
On-street pavement-marking and signs

Maintenance of bicycle pavement markings, such as lines, sharrows, stencils and signs, is important for the comfort of cyclists and provides clarity for motorists. The City intends to apply bicycle pavement markings earlier in the construction season to permit the use of more durable materials that can withstand the winter.

On-street closures and detours

Street closures and associated detours are required for construction projects, maintenance and emergency situations. Cyclists need to be considered in the planning and implementation of closures and detours. The City is updating the “Temporary Traffic Control Manual” to include provisions for bicycles during construction and detours.





Multi-use pathways

Based on the Pathway Safety Review, most Calgarians believe that the pathway system is operated and maintained to a reasonable level. There are some concerns about snow and ice removal and debris, cracks, potholes and root damage on pathways.

The majority of requests about pathways deal with snow and ice removal (35–50 per cent of annual requests), and the majority of these are requests to clear more of the pathway system. This would enhance winter use and bring Calgary's practice more in line with other winter cities. The City currently clears 157 kilometres or 22 per cent of the pathway system. This should be increased to 300 kilometres or 42 per cent of the current system. As a comparison, the other cities surveyed as part of the Pathway Safety Review remove snow from 45 to 100 per cent of their systems; however, their systems are smaller than Calgary's.

In addition to clearing snow from the pathway system, The Pathway Safety Review recommends:

- Improving intersections of pathways with streets, bridges and other pathways.
- Removing encroaching vegetation and fixed objects that are within 1 metre of the pathway.
- Addressing lighting in tunnels and underpasses.
- Improving signing on curves, hills and blind corners.
- Fencing off-leash dog areas from the pathway.
- Repairing and replacing bollards in poor condition.
- Increase pathway widths or separate wheeled users where volumes warrant and where physically possible, during lifecycle or major repair work.

Table 6-4 Operate and maintain bicycle infrastructure - actions

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C26	Monitor the gravel-sweeping of on-street bicycle routes to determine how well the pre-sweeping is working and update practices based on results.	→	→			
C27	Develop a new level of service for high-quality gravel-sweeping and snow and ice control of on-street bicycle routes in high use / high growth areas.	→	→		✓	
C28	Promote the annual roadway pothole repair program to encourage cyclists to report pothole locations on bicycle routes.	→	→		✓	
C29	Maintain bicycle route pavement marking and signs.	→	→		✓	

Pathway Safety Review recommendations

Establish ongoing capital funds to address pathway lifecycle needs taking into consideration the backlog of current declining pathway surfaces and future needs identified through annual surface inspections.

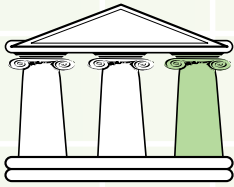
Resource additional operating funds to increase minor pothole and miscellaneous repairs thereby extending the life of some pathways before life cycling is required.

Establish capital funds to address safety issues on the existing pathway system infrastructure, excluding pathway surfaces. Safety issues relating to the following pathway components will be addressed: adjacent landscaping, curves, hills, blind corners, signage, intersections, bollards, bridge/pathway transitions, lighting, fixed objects within 1 metre.

Increase annual snow and ice removal on pathways from 157km (22%) to 300km (42%).

For the upgrading or life cycling of existing pathways:

- Increase widths of regional pathways in river and creek valleys to 4m wherever possible.
- Increase widths of regional pathways in the uplands to 3m wherever possible
- Increase widths of local pathways to 2.5m wherever possible.
- In some areas, consider twinning as an alternative to increasing widths.



6.3 Pillar Three: Bicycle education and promotion

A comprehensive bicycle strategy requires attention not only to the infrastructure to support safe cycling, but to educating, encouraging and enforcing safe behaviours from all who use the streets, pathways and bikeways.

This is particularly true when addressing the concerns raised by Calgarians about safety. A comprehensive multi-year education program will provide all Calgarians with the information needed to increase their understanding of how cycling and cyclists can be safely incorporated into daily life and reduce conflict between users on the streets and pathways. That is, it will be important to bolster safe, respectful and law-abiding behaviour by cyclists and motorists alike.

However, safety is only part of the opportunity with education. As has already been mentioned (section 4.0), cycling is more than just a way to get to work; it is fast gaining support in many North American cities for being stylish and fun, providing freedom, allowing for an expression of increased concern about health, the environment and economic realities through active transportation habits. Cycling has been identified as a reflection of the economic and social vitality of a city.

The challenge is that education alone will not bring about an increase in the number of people who cycle. It will take more than simply building infrastructure and implementing broad education strategies. It will also take working with Calgarians to encourage and support them so that they feel comfortable cycling.

A promotion and encouragement program will roll out as bicycle infrastructure is completed in neighbourhoods. This will include customized information about cycling and the new bicycle infrastructure, and even fun local events to celebrate these changes.

It will also include larger events, including car-free events on some streets, providing people with the opportunity to experience the city streets in a new way.

Cycling has been identified as being very beneficial to children — cycling education for children will be a priority. Schools across bicycle-friendly cities have reported that children who cycle or walk to school learn better. And cycling helps with self-esteem, distracted behaviours and childhood obesity.

Partnerships with business, community and the media are crucial to developing and delivering educational and encouragement campaigns and will provide broad-reaching benefits to all involved. Two other key partnerships will be with the Calgary Police Service and Animal and Bylaw Services, in providing both education and enforcement of behaviour on streets and multi-use pathways.

Many of the concerns raised in the public engagement process can be partly addressed through education, promotion or enforcement (Table 6-5). The actions respond to concerns about safety in traffic, how to handle a bicycle when the weather changes and where to secure a bicycle. More than 80 per cent of Calgarians agreed that increased education for motorists and cyclists would help encourage them to cycle.

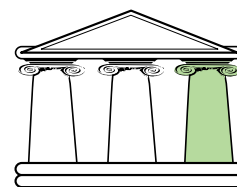
Calgarians said:

They don't feel safe cycling in traffic (80 per cent).

Increased education about road rules for cyclists (82 per cent) and for motorists (81 per cent) would encourage them to cycle.

Actions and behaviours of other users can make the pathways unsafe (between 62 per cent and 72 per cent of pathways users).

Source: Pathway Safety Review



www.pedbikeimages.org / Mike Cyrnecki

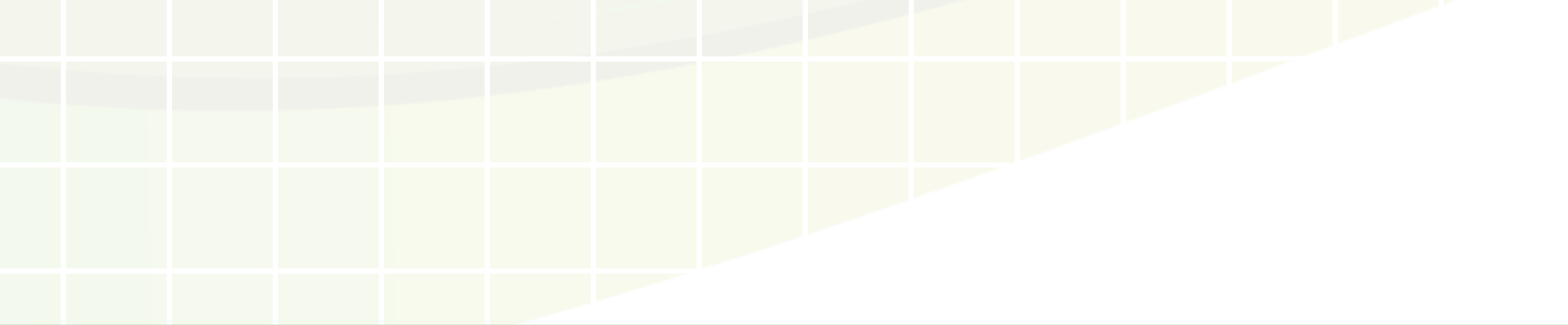
Background

The City already has several bicycle education, promotion and enforcement programs and initiatives including:

- Updating and publishing the Pathway and Bikeway Map, which contains information on bicycle bylaws, laws and etiquette, every three to four years.
- Hosting CAN-bike basic bicycle skills courses.
- Working with schools to enhance safety for children walking and cycling to school by installing infrastructure such as crosswalks.
- Providing helmets and helmet education to children and youth in after-school programs and at schools.
- Providing basic bicycle education at schools — the ABCs — air, brakes and chain.
- Promoting cycling as an alternative to driving alone at employer and community events and through employer mobility programs.
- Supporting community-led events and festivals, such as Bike to Work Day and Bow River Flow, through marketing and provision of materials such as bicycle maps and bicycle bells.
- Updating The City’s “Fleet Operator’s Handbook” to include more information about sharing the road with bicycles.
- Educating on pathway rules and etiquette by uniformed Bylaw officers.

Events and festivals, especially those planned to highlight the enjoyment of cycling, can draw large crowds and provide opportunities to showcase the advantages of cycling in Calgary. The City supports the promotion of cycling by facilitating street closures and co-ordinating detours. New ways for The City to promote cycling include formalizing a Bike Month, initiating a bicycle/street festival, hosting conferences, launching a public bike share system and helping students walk or cycle to school.

While these initiatives are important, they would be more effective, efficient and impactful if coordinated within an ongoing bicycle education, promotion and enforcement program.



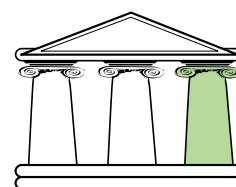


Table 6-5 Bicycle education, promotion and enforcement actions

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C30	Develop and deliver an ongoing bicycle education program for cyclists, motorists and pathway users to help increase understanding and reduce conflicts. Partner with other organizations to deliver the program citywide.	→	→		✓	✓
C31	Develop bicycle training and education courses and work within The City and with external groups to pilot the courses to a variety of Calgarians.	→	→		✓	✓
C32	Work with the Calgary Police Service to develop education and enforcement campaigns to ensure that cyclist and motorist behaviour is safe, respectful and adheres to laws.	→	→		✓	
C33	Explore different ways of providing the most up-to-date pathway and bikeway routing information to Calgarians on an ongoing basis.	→	→			✓
C34	Develop and deliver an ongoing bicycle promotion campaign about the benefits of cycling as a fun, healthy, convenient and inexpensive way to travel. Partner with organizations and retailers and seek opportunities to collaborate on common goals to encourage cycling.	→	→		✓	✓
C35	Formalize June as Bike Month in Calgary.	—				
C36	Host a bicycle event/street festival (Ciclovía/Parkway) in co-ordination with Canada Day at Prince's Island Park every year as part of developing and encouraging the use of public spaces for the enjoyment of all Calgarians.	→	→		✓	✓
C37	Host a "Developing Ciclovía /Parkway Summit" in Calgary in October 2011 in preparation for the 2012 Canada Day Ciclovía /Parkway and invite speakers with experience in developing these events.					
C38	Organize and host a pre-conference in Calgary in advance of the international Velo-City cycling conference to be held in Vancouver on June 23–26, 2012.	—			✓	✓
C39	Explore how to expand The City's scope to further support the Active and Safe Routes to School program in Calgary.	→	→			
C40	Explore how to support and encourage businesses that use bicycling as a key part of their business or that support employees who ride a bicycle.	→	→			
C41	Purchase temporary bicycle racks to set up at festivals and events around Calgary to encourage people to cycle.	—		✓		✓
Pathway Safety Review recommendations						
Develop & implement a comprehensive joint Education Plan for multi-use pathways with Transportation, Parks, and Animal & Bylaw Services (ABS).						
Increase bylaw officer presence and targeted enforcement on the pathways with a joint Parks and Animal & Bylaw Services work plan.						
Investigate feasibility of allowing electric bikes and Segways on pathways.						



6.4 Actions for 2015 and beyond

After the 2012-2014 business plan and budget cycle, new actions will be identified to sustain progress towards becoming one of the premier cycling cities in North America. The actions should be considered in the business plans for 2015-2017 and beyond. Potential actions include:

Pillar One: Plan, design and build bicycle infrastructure

1. Update practices to reflect new technologies, such as advances in GPS and GIS, to maintain accurate records of bicycle-related infrastructure in order to effectively plan and monitor investments.
2. Work with experts to assist with the suggested changes to provincial legislation.
3. Continue to improve bicycle routes in the city centre with the goal of completing at least 70 per cent of the network identified in the Centre City Mobility Plan by 2020.
4. If the bike share system is successful in the city centre, consider increasing the number of stations and explore the creation of another public bike share system in the University of Calgary/Foothills Medical Centre/Children's Hospital/Brentwood TOD Activity Centre.
5. Prioritize existing transit hubs, for example stations along the Southeast, Northeast and Northwest LRT lines, and improve bicycle routes to and parking at priority stations.
6. Continue to look for innovative ways of integrating cycling and transit, particularly with LRT and BRT, to comply with the CTP is direction that "walking and cycling must be integrated with transit services and improve intermodal opportunities at the community, city and regional scales." (CTP page 3-8).
7. Continue to seek out opportunities to provide or encourage others to provide amenities and services to cyclists such as:
 - Bicycle stations in employment-intensive areas.
 - Self-service repair facilities at strategic locations.
 - Bicycle amenities for building tenants.



Pillar Two: Operate and maintain bicycle infrastructure

8. Monitor and enhance The City's operation and maintenance of Calgary's cycling infrastructure.

Pillar Three: Bicycle education and promotion

9. Develop a course for motorists and cyclists to take as an alternative to paying a fine for driving and cycling violations. The course would aim to educate motorists and cyclists about the rules of the road and their respective rights and responsibilities.
10. Work with the appropriate agencies to encourage and support the development of age-appropriate bicycle safety, education and training curricula for the elementary, junior and high school levels.
11. Explore ways to support local organizations in refurbishing and distributing bicycles that are destined for the landfill.
12. Research and develop a policy on the use of electric bicycles on pathway and bikeway systems.
13. Investigate the development of a comprehensive pathway and bikeway wayfinding signage plan. Best practices from other cities indicate that signage with directions, destinations, distances and travel times to key destinations are important.



www.pedbikeimages.org / Dan Burden

7.0 CYCLING FOR RECREATION AND SPORT

While the focus of this Strategy is to identify actions to encourage cycling in Calgary for transportation purposes, The City also supports cycling for recreation and sport. The City's Recreation Master Plan acknowledges the importance of sport to the quality of life of Calgarians. People who cycle for recreation may be more receptive to cycling for other purposes. In The City's independent Recreation Amenities Gap Analysis, 2010, cycling for pleasure was ranked second after swimming as a recreational activity in which Calgarians of all ages currently participate.

Bicycle clubs and sport facilities

Recreational activities, such as bicycle touring, downhill and cross-country mountain biking, BMX racing, road racing, cyclo-cross, para-cycling and track cycling, are popular, can enhance tourism and are encouraged and supported by The City. For example, The City has been working to identify at least one piece of land for development of a public mountain bike skills park in Calgary; once identified, the land would be leased to the mountain biking community to develop the park. Calgary's recreational cycling facilities include a BMX racing course, an outdoor velodrome and a privately-owned mountain bike park. Cyclists may also enjoy all designated trails (soft surface, either gravel or earth) within Calgary.

Calgary's dozens of cycling clubs host rides, races and events throughout the year. Organized rides can vary from a leisurely ride along the pathway system to longer tours on the highways outside of Calgary. While some organized rides travel on the roadways and highways, some cyclists prefer recreational rides on multi-use pathways.

Trans Canada Trail

The Trans Canada Trail is routed on Calgary's pathways along the Bow River, Elbow River and Nose Creek. The Trail is a multi-use recreational network that winds its way through every province and territory. When completed, it will connect the Atlantic, Pacific and Arctic oceans, linking 1,000 communities and 33 million Canadians. Calgary is where the east-west trail meets the north-south trail. Elsewhere in southern Alberta, Trans Canada Trail's Legacy Trail, completed through a partnership between the federal and provincial governments and both towns, connects Canmore to Banff through Banff National Park. The Province of Alberta's work to develop a guidance document for human-powered trails will further strengthen the opportunities for cycling on non-motorized facilities in the province.

Connections at Calgary's edges

Bicycle connections to Calgary's borders are also important. These are part of the plans put forward by the Calgary Regional Partnership, a coalition of jurisdictions in the Calgary area that takes a proactive approach to regional growth and planning issues. The pathway planned to connect Calgary to Cochrane along the Bow River is just one example of an intermunicipal bicycle route. Bicycle connections to the surrounding municipalities, municipal districts and highways will also be considered in the proposed update to Calgary's Pathway and Bikeway Implementation Map.

Calgary Greenway

New bicycle routes around Calgary's perimeter will be provided by The Calgary Parks Foundation's Calgary Greenway. This will be of a continuous system of pathways and green space and will be implemented in partnership with The City. Once complete, it will encircle Calgary and offer a year-round amenity for activities, such as cycling. The first segment of the Calgary Greenway was built in northeast Calgary in 2009.

Actions for 2015 and beyond

The City will continue to expand the portions of pathway that are part of the Trans Canada Trail system. This work will be coordinated with land development and major infrastructure projects. As funding becomes available, additional portions of the Calgary Greenway will be built. The City will continue to work with Calgary cycling clubs to assess their needs for services and facilities.



Mikael Colville-Andersen

8.0 MONITORING AND EVALUATION

A monitoring and evaluation program for cycling is important and will allow The City to gain information that can guide future decisions, measure progress towards becoming one of the premier cycling cities in North America and provide accountability to the public.

8.1 Indicators and metrics

Performance measures for the Strategy (Table 8-1) are grouped into four areas based the specific and measurable goals identified in section 1.0:

1. Increases in the number of people who cycle.
2. Increases in the amount of infrastructure that supports cycling.
3. Increases in the safety of cyclists.
4. Increased satisfaction with cycling in Calgary.

Calgary's performance in the first three areas is presented in section 2.1.

Number of people cycling

Although 59 per cent of Calgarians are interested in cycling more often, only one per cent regularly ride a bicycle. If the Cycling Strategy is effective in addressing the barriers and issues, we can expect the volume of cyclists to increase across the city, which supports the 60-year CTP target of 20-25 per cent of all trips made by walking or cycling. The best source for this information is the Calgary and Region Travel Survey (CARTS), formerly the Household Activity Survey, where respondents provide data on all of their daily trips. The CARTS is currently conducted every 10 years, with the next survey scheduled for late 2011.

Cycling infrastructure

Street and pathway concerns were identified as the highest priority by the cycling committee, and Calgarians indicated that if dedicated space were available for cyclists, they would consider cycling more often. Most of these concerns can be addressed through a high quality, expanded network of bicycle routes, especially in areas such as the city centre, major transit hubs and employment-intensive areas. The Primary Cycling Network (PCN) routes, as defined in the CTP, will connect major destinations and will include the best possible infrastructure that can be reasonably accommodated.

Cycling safety

Safety is paramount in making cycling a viable choice for all Calgarians. The City is currently developing a multi-modal Transportation Safety Plan that includes cyclist safety as a priority. The plan will include targets for collision reduction and potential strategies to improve bicycle safety. The number of collisions and injuries is related to the number of cyclists, so it is important to examine the number of collisions and injuries per capita. The city-wide number of home-to-work cyclists, as determined by the civic census, was chosen as the normalization factor.

Satisfaction with cycling

Calgarians are asked every year through a telephone survey to rate their satisfaction with City services. The survey contains a question about the pathway network. An additional question about the on-street bicycle network could be combined with the question about pathways to provide an indication of satisfaction with the network as a whole. The development of the Strategy also included a telephone survey which can be periodically repeated to analyze trends, successes and areas for improvement.

Table 8-1 Cycling indicators

Indicator	#	Metric	Unit	Baseline (2009 unless otherwise noted)	2020 Target	Source
Cycling Activity	1	Home to work mode split (24 hours, city-wide)	%	1.4% (2006)	2%	Civic census transportation survey
	2	Cycling mode split (all purpose trips, 24 hours, city-wide)	%	0.8% (2001)	1.5%	Calgary and Region Travel Survey (formerly Household Activity Survey)
	3	Percentage of female cyclists (all-purpose trips, 24 hours, city-wide)	%	29% (2001)	40%	Calgary and Region Travel Survey (formerly Household Activity Survey)
	4	Centre City cycling mode split (AM peak, inbound only)	%	1.9% (2010)	4%	Annual CBD cordon counts
	5	Major Activity Centre cycling volumes	# / 16 hrs	To be established		Major Activity Centre cordon counts
	6	Average increase in cyclist volumes observed after a route improvement	%	To be established		Bicycle volume counts
	7	Number of cycling trips using the bike share system per year.	#	0	200,000	Bike share system operator
Cycling Infrastructure	8	Length of future primary cycling network built (as per 2009 CTP)	km	68	100	Future TransNet GIS layer
	9	Length of primary cycling network completely implemented including snow clearing (as per 2009 CTP)	km	8	38	Roads Maintenance & Future TransNet GIS layer
	10	Percentage of population and jobs within 800 metres of cycling network	%	To be established		Pathway and bikeway GIS layers
	11	a) Total length of cycling network	km	1,067	1500	Pathway and bikeway GIS layers
		b) Regional pathways	km	712	900	Pathway GIS layer
		c) On-street bikeways	km			Bikeway GIS layer
		• Signed routes/bicycle boulevards		328	370	
		• Shared lanes		15	20	
	• Bicycle lanes		12	180		
		• Cycle tracks		0	30	
	Total on-street bikeways		355	600		
12	Length of on-street cycling network with high level of snow and ice control service	km	0	60	Roads Maintenance & bikeway GIS layer	
Safety	13	Collisions involving a cyclist on public streets	# crashes / 1,000 home to work cyclists	18.4	16	Calgary Police Service, civic census transportation survey
	14	Cyclist injuries due to collision	# injuries / 1,000 home to work cyclists	11.2	10	Calgary Police Service, civic census transportation survey
	15	Cyclist fatalities due to collision	#	0	0	Calgary Police Service
Citizen Satisfaction	16	Satisfaction with the on-street cycling network	% satisfied and very satisfied	To be established		Citizen Satisfaction Survey
	17	Perceived safety in traffic	% agreement	21% (2010)	40%	Telephone Survey or other surveys
	18	Perceived coverage of bikeway network	% agreement	47% (2010)	60%	Telephone Survey or other surveys
	19	Perceived satisfaction with amount of bike parking	% satisfied and very satisfied	46% (2010)	60%	Telephone Survey or other surveys



8.2 Data collection and reporting

The list of actions (Table 8-2) reflects the need to enhance data collection for cycling by using technology and incorporating bicycle performance measures into existing data collection programs. It also reflects a need to report on the status of proposed actions in the Strategy.

Table 8-2 Actions for data collection and reporting

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C42	Investigate best practices and technology for cycling data collection, purchase automated counting stations and install them in strategic locations.	—		✓		
C43	Investigate the inclusion of a question regarding on-street bikeways in the Citizen Satisfaction Survey to update and report on indicator 16 in Table 8-1.	—			✓	
C44	Investigate conducting periodic telephone surveys to update and report on indicators 17, 18 and 19 in Table 8-1.	→	→		✓	
C45	Investigate improvements to bicycle collision reporting format and procedures with the Calgary Police Service and the Government of Alberta.	—				
C46	Report to Council, Administration and the public on all performance measures prior to each business planning cycle, beginning with the 2015-2017 business planning cycle.	—				
C47	Report yearly to Council on the status of actions identified in the Cycling Strategy.	→	→			

9.0 RESOURCES AND FUNDING



The City requires dedicated staff to carry out many of the actions identified in section 6.0, particularly for those in the first pillar, the implementation of bicycle route improvements, and the third pillar, the development and ongoing delivery of a comprehensive bicycle education and promotion program. While many of the actions identified in The Strategy can be accomplished within existing budgets, some will require dedicated staff and funding (Table 9-1).

Table 9-1 Dedicated staff

Cycling Strategy actions		2012 to 2014	2015 +	Capital Costs	Operating Costs	Potential Partnerships
C48	Dedicate a Bicycle Design Engineer in the Roads business unit to help develop a bicycle design guide, prepare conceptual and detailed designs for on-street bikeways, Complete Streets and other bicycle amenities.	→	→		✓	
C49	Dedicate a Bicycle Planner in the Transportation Planning business unit to co-ordinate and plan bicycle route improvements and pilot projects and manage the creation of a new Pathway and Bikeway Implementation Plan.	→	→		✓	
C50	Dedicate a Bicycle Education and Promotion Coordinator in the Transportation Planning business unit to develop an ongoing education and promotion program and work with partners on delivering educational messages and promotional events to Calgarians.	→	→		✓	

Actions can be led and supported by various departments within The City. The capital costs identified below (Table 9-2) are associated with the budget for the Transportation Department unless otherwise noted. The capital funding needs are to be included in the Transportation Infrastructure Investment Plan (TIIP).

Ongoing operating costs (Table 9-3) to be included in the 2012 to 2014 budget planning process.

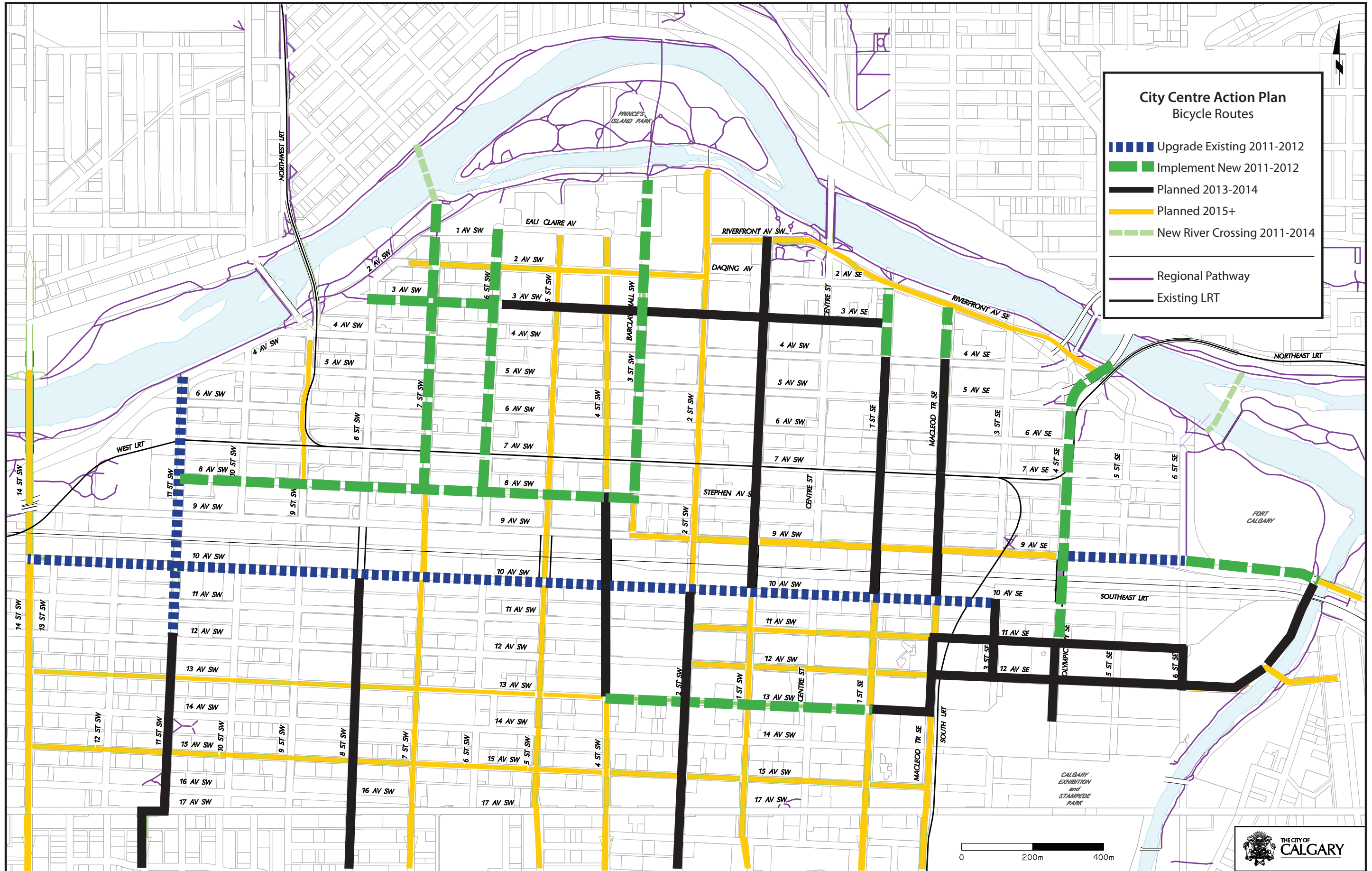
Table 9-2 Funding for capital initiatives (2012-2014)

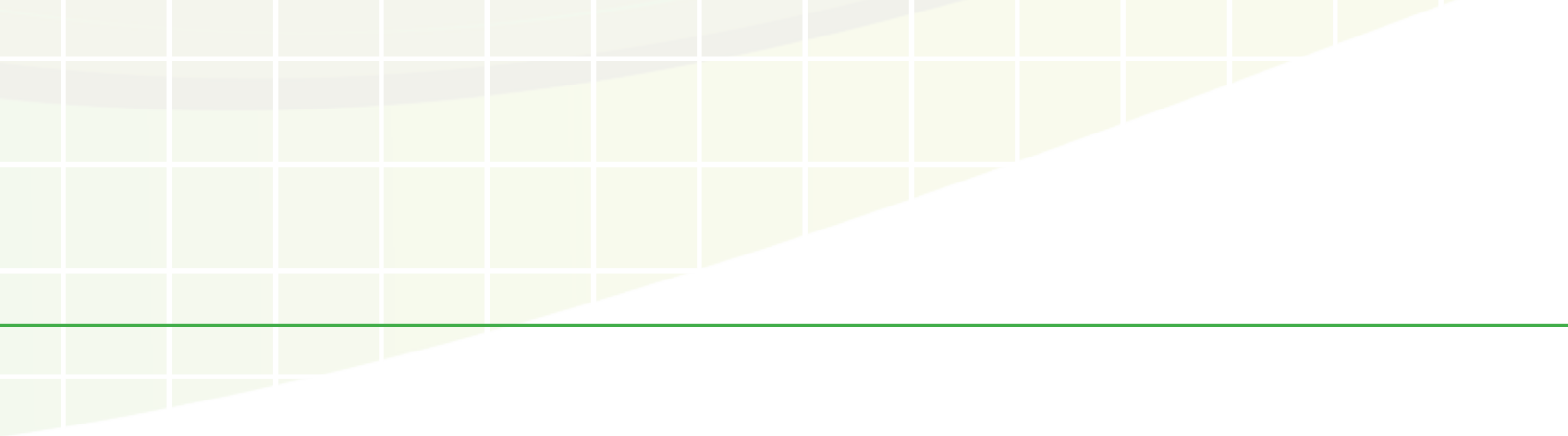
	Capital Costs (2012-2014)
Pillar One: Plan, design and build bicycle infrastructure (Section 6.1)	
City Centre	
• Bicycle route improvements (Appendix A)	\$ 2,400,000
• Pilot projects (cycle tracks, bike boxes, etc.)	\$ 1,500,000
• Public bike share*	\$ 2,300,000
• Bicycle stations*	\$ 3,000,000
Coordination with transit	
• West LRT bicycle route and bicycle parking improvements	\$ 5,000,000
• Saddle Ridge transit station bicycle route improvements	\$ 800,000
• Rocky Ridge/Royal Oak and Tuscany transit station bicycle route improvements	\$ 500,000
• Bicycle improvements in co-ordination with new transit lines	\$ 3,000,000
Activity Centres	
• Major Activity Centre - University of Calgary bicycle route improvements	\$ 300,000
• Bicycle improvements co-ordinated with CTP/MDP-aligned work — Activity Centres, Nodes and Corridors*	\$ 7,500,000
City wide	
• Bicycle route missing links	\$ 1,500,000
• Bicycle parking (bicycle racks, bicycle lockers)	\$ 100,000
Monitoring and evaluation (Section 8.0)	\$ 100,000
TOTAL	\$ 28,000,000
Less *= Actions funded by partnerships, sponsorships	(\$ 5,300,000)
Less Actions funded by existing programs	(\$ 10,500,000)
UNFUNDED CAPITAL COSTS	\$ 12,200,000

Table 9-3 Funding for operations

	Operating Costs	
	Ongoing/annual	One-time
Pillar One: Plan, design and build bicycle infrastructure (section 6.1)		
Create a new Pathway and Bikeway Implementation Plan.		\$ 480,000
Create new bicycle design guides.		\$ 230,000
City centre – public bike share*	\$ 425,000	
Pillar Two: Operate and maintain bicycle infrastructure (section 6.2)		
Provide high quality gravel-sweeping and snow and ice control service.	\$ 400,000	
Maintain bicycle route pavement marking and signs.	\$ 225,000	
Pillar Three: Educate and promote (section 6.3)		
Develop and deliver on-going bicycle education programs and promotional events.	\$ 500,000	
Three dedicated staff (section 9.0)	\$ 360,000	
TOTAL	\$ 1,910,000	\$ 710,000
Less *= Actions funded by partnerships and sponsorships	(\$ 425,000)	(\$ 0)
Less Actions funded by existing programs	(\$ 0)	(\$ 0)
UNFUNDED OPERATING COSTS	\$ 1,485,000	\$ 710,000

APPENDIX A – CENTRE CITY ACTION PLAN MAP





APPENDIX B – GLOSSARY OF TERMS

accessibility

Ease of access/egress to any location by walking, cycling, transit and private vehicles or commercial vehicles.

action

A specific task to help achieve an objective or implement a policy.

active modes

Human-powered modes of travel. Primarily walking and cycling but also in-line skating and the use of mobility devices.

Activity Centre

An area which generally has a low-density built form today and an existing employment character on which to build. Its parcel size, location and built form provide the potential for comprehensive, higher-intensity development that can be integrated with the Primary Transit Network, Primary Cycling Network and adjacent communities.

bicycle boulevard

A low-volume and low-speed street that has been optimized for bicycle travel through treatments such as traffic calming and traffic reduction, signage and pavement markings and intersection crossing treatments. These treatments allow through-movements for cyclists while discouraging similar through-trips by non-local motorized traffic.

bicycle station

A secure indoor bicycle parking facility that may include washrooms, change rooms, showers, lockers, self-service bicycle tools, bicycle repair and rental services, retail sales and trip planning information.

bicycle stencil

A bicycle symbol marking on the pavement used to identify bicycle lanes and shared use lanes.

buffered bicycle lane

A bicycle lane with a buffer to increase the space between the bicycle lane and the travel lane or parked cars. The buffer is typically a space delineated by lines on the pavement.

bicycle (bike) lane

An on-street travel lane designated for the exclusive use of bicycles.

bikeway

A designated bicycle route located on-street, regardless of whether such facilities are designated for the exclusive use of bicycles. May include other bicycle improvements, such as wide curb lanes, bicycle lanes or shared lanes.

Bus Rapid Transit (BRT)

A type of limited stop bus service that relies on technology to speed up the service. It can operate on exclusive transit ways, high occupancy vehicles lanes and any type of street. A BRT line combines intelligent transportation systems technology, priority for transit, rapid and convenient fare collection and integration with land use policy in order to upgrade bus system performance substantially.

catchbasin

Grated inlet and basin which allows water runoff to drain into the storm sewer system.

Central Business District (CBD)

A subset of the city centre with a concentration of high density employment, typically retail and office space. Calgary's CBD is bounded in the north by the Bow River, in the east by the Elbow River, in the south by Ninth Avenue South and in the west by 14th Street West.

commuter

A person travelling from home to their place of work/school and vice versa.

Complete Street

A street designed to move people by foot, bicycle, bus and car; provides access to places where people can live, work, shop and play; supports the natural environment; facilitates movement of trucks and service vehicles, and supports our economy.

complete community

A community that is fully developed and meets the needs of local residents through an entire lifetime. Complete communities include a full range of housing, commerce, recreational, institutional and public spaces. A complete community provides a physical and social environment where residents and visitors can live, learn, work and play.

Corridor

An area of residential, employment and retail uses oriented along a street served by the Primary Transit Network.

cordon

A data collection technique in which all travellers crossing the boundaries into and out of an established zone are counted. An example is counting all travellers entering or leaving the Central Business District.

cycle track

Dedicated space for bicycles built into street right-of-way. It is physically separated from both vehicle travel lanes and sidewalks to improve safety and efficiency for all modes of transportation.

full-time equivalent (FTE)

A full-time position (35 – 40 hours per week) or a combination of positions (in whole or in part) that provide the same number of working hours as a full-time position.

Geographical Information System (GIS)

A system that stores, manages and presents data with reference to geographic location.

Geographic Information System (GIS) layer

A set of GIS data which contains geographic data for a particular feature (for example, a GIS layer may contain the location data for all bicycle lanes in a specified area).

Global Positioning System (GPS)

A freely-accessible navigation satellite system that provides precise orbital and chronological information to receiver units, which are then able to compute position.

goal

A desirable condition to be achieved – a sought-after end state that is not quantifiable or time-dependent. Provides context for corresponding objectives and policies.

green wave

The synchronization of traffic signals along a bicycle route such that cyclists travelling at a certain speed (often approximately 20 km/h) will not be stopped by any red lights.

HOV (high-occupancy vehicle)

A vehicle with two or more occupants; includes transit vehicles, taxis, and private vehicles.

level of service (LOS)

A measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways by categorizing traffic flow with corresponding safe driving conditions. The concept can also be applied to pedestrian and bicycle infrastructure, intersections, transit, and water supply.

lifecycle cost

The sum of all recurring and one-time costs over the full life span or a specified period of a good, service, structure or system. It includes purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or of its useful life. Lifecycling can refer to the act of removing or salvaging an asset that has reached the end of its useful life and replacing it with a new asset.

Light Rail Transit (LRT)

Electrically-powered rail cars, operating in sets of three to five cars per train, operating on protected rights-of-way, adjacent to or in the medians of roadways or rail rights-of-way. Generally at grade, with some sections operating in mixed traffic and/or tunnels or on elevated bridge structures.

Major Activity Centre (MAC)

An area with high job and population growth located in a strategic area central to larger residential catchment areas. Linked city-wide by the Primary Transit Network and Primary Cycling Network. Identified in the text and maps of the Calgary Transportation Plan 2009.

mode (of transportation)

A distinct means of transportation that involves a unique combination of vehicle, infrastructure and operation, such as walking, cycling, taking transit, carpooling or driving.

mode share or modal share

The proportion of total person trips using one particular mode of transportation.

mode split or modal split

The proportion of total person trips using each of the various modes of transportation.

Node

A location where a corridor intersects a major transit street.

objective

An expression of a desired outcome or more specific way to achieve a goal.

pathway

An off-road, multi-purpose thoroughfare controlled by The City of Calgary and set aside for use by pedestrians, cyclists and persons using wheeled conveyances. Improved by asphalt, concrete or brick, and includes any bridge or structure with which it is contiguous.

policy

A deliberate statement or plan to achieve an objective. Policies are instructive, directional and positive, but not limited to a single course of action when some other course could achieve the same result.

Primary Cycling Network (PCN)

A network of on-street cycling facilities, pathways and cycle tracks that connects major destinations such as activity centres, mixed-use corridors and major institutions. Defined and shown on a map in the Calgary Transportation Plan 2009.

Primary Transit Network

A permanent network of high-frequency transit services, regardless of mode, that operates every 10 minutes or better, 15 hours a day, seven days a week. Defined and shown on a map in the Municipal Development Plan (2009)

public bike share system

A public bike share system is a service that responds to the needs of trips almost long enough for a public transit bus ride but perhaps too short for a taxi ride. It consists of a network of bicycle stations that are closely spaced and placed in strategic locations for ease of use. After registering or providing a small deposit, riders can pick up a bicycle from one docking station and, when finished, drop it off at another.

right-of-way

Publicly owned land containing streets and/or utilities.

screenline

A data collection technique in which all travellers crossing a linear boundary are counted. An example is counting all travellers crossing Deerfoot Trail.

shared lane

On a street, a travel lane closest to the curb that is wide enough to accommodate motorists and cyclists side by side in a safe manner and identified by pavement marking and signage.

sharrow

A shared-use lane marking, typically a bicycle symbol with two chevrons or arrows, placed on the pavement in the area intended for bicycle travel. The symbol raises awareness to both cyclists and motorists of the correct cyclist positioning in the lane.

SOV (single-occupant vehicle)

A vehicle with only one occupant—the driver.

speed hump

A raised area of a roadway which vertically deflects both the wheels and chassis of a traversing vehicle.

Standing Policy Committee on Land Use, Planning and Transportation (LPT)

A committee of City Council composed of the Mayor and seven members of council. Responsible for the formulation of policy and decision-making within existing Council policy with respect to land use planning and policy, development and building approvals, the planning, design and monitoring of transportation routes, traffic operations, parking facilities, public transit and property assessment.

sustainability

Meeting the needs of the present without compromising the ability of future generations to meet their own needs. It includes environmental, economic and social sustainability. Sustainability is defined by the 11 Sustainability Principles for Land Use and Mobility, approved by Calgary City Council on Jan 8, 2007.

traffic circle

A raised circular island located in the centre of an intersection of two low volume streets, which requires vehicles to travel through the intersection in a counter-clockwise direction around the island.

transit hub

A place of connectivity in which different modes of transportation come together seamlessly and where there is an attractive, intense and diverse concentration of housing, employment, shopping and other amenities around a major transit station.

Transportation Infrastructure Investment Plan (TIIP)

A plan defining the priority and timing of infrastructure projects for the Transportation Department. This program of system improvements defines the overall transportation capital investment plan for a 10-year period and provides information to Council to prepare capital budgets for three-year business planning cycles.

trip

An activity that moves a traveller from an origin to a destination using a single mode. Travelling may involve changes of modes, in which case each portion is considered a separate trip.

wayfinding

A term used to describe how people respond to the built environment to orient themselves. Elements that contribute to wayfinding include reference points like signage, natural areas or parks, landmark buildings, bridges, distinctive lighting and public art.

webinar

Short for web-based seminar; a presentation, lecture, workshop, or seminar that is transmitted over the web.

APPENDIX C – ENGAGEMENT STRATEGY

In order to ensure that the Cycling Strategy reflects the needs of both current and future Calgary cyclists, an engagement strategy was developed on the direction of Council. The engagement strategy adhered to the cornerstones of The City of Calgary's engage! policy: accountability, inclusiveness, transparency, commitment and responsiveness. External engagement began in June 2010 and was completed in March 2011. Internal engagement started in December 2010 and was completed in May 2011. Three input streams of research and engagement opportunities were created as part of the cycling strategy process – a telephone survey, an online survey and a cycling committee.

Telephone survey

The City of Calgary commissioned an independent telephone survey of 750 Calgarians in September 2010. This was the first comprehensive effort to hear from Calgarians about cycling and included input from cyclists and non-cyclists alike. The survey asked about barriers to cycling. Respondents were given the opportunity to provide suggestions for what improvements might encourage them to try cycling or to cycle more often. The survey results indicated that Calgarians can be grouped into four categories of cyclists: fearless, confident, interested and reluctant. The results and analysis were placed on the cycling strategy website in January 2011. The executive summary can be found in Appendix D.

Online survey

The City commissioned an independent online survey to provide interested Calgarians with an opportunity to provide input. The online survey asked the same questions as the telephone survey. Results showed that the respondents to the online survey are much more likely to cycle at least once a week and represent an experienced and valuable resource. They provided insight into barriers that may not occur to those who cycle less frequently. The results and analysis were placed on the cycling strategy website in January 2011. The executive summary can be found in Appendix E.

Volunteer Cycling Committee

The City formed a volunteer citizen cycling committee. The committee consisted of 14 Calgarians, including nine people representing a variety of cycling skills and comfort levels, ages, cycling interests and family status. The committee also included one youth representative and four representatives from the following cycling organizations: the Calgary Pathway and Bikeway Advisory Council, Bike Calgary, the Elbow Valley Cycle Club and the Calgary *tour de nuit* Society.

The committee identified and prioritized nine areas of concern and identified street concerns, pathway concerns, education and promotion as top priorities. The results of the committee's work prioritisation were placed on The City's website in January 2011 and can be found in Appendix F.

Engagement process for a cycling strategy

Scoping Report for Cycling Strategy – Approved by Council June 2010

Purpose: Develop a comprehensive cycling strategy that identifies actions The City will take in order to make Calgary a bicycle-friendly city for all – a city where cycling is a great option for transportation and recreation.

To be completed with a report by Parks on the safety review of the existing multi-use pathway system.

The two reports are linked: a comprehensive cycling strategy will include pathways as a key piece of infrastructure and a pathway safety review will include cyclists as one of their multiple user groups.

Cycling Strategy engagement

Utilizing the engage! Spectrum of Strategies and Promises, the project team engaged at the “Inform,” “Listen and Learn,” and “Consult” levels to identify barriers to cycling in Calgary and prioritize those barriers for The City to address.

Telephone survey

Statistically representative tool used to gather input from Calgarians:

- included cyclists and non-cyclists

Results placed on the cycling strategy website

Asked: What are barriers to cycling? What would encourage you to cycle?

Online survey

Tool used to gather input from any interested Calgarians:

- included Volunteer Cycling Committee members and those who applied
- included cyclists and non-cyclists

Results placed on the cycling strategy website.

Asked: What are barriers to cycling? What would encourage you to cycle?

Volunteer Cycling Committee

Committee formed to help identify, categorize and prioritize barriers; representatives from:

- Bike Calgary, Calgary Pathway & Bikeway Advisory Council, Elbow Valley Cycle Club, Calgary *tour de nuit* Society
- one youth representative, and
- nine Calgarians who represent a variety of cycling skill and comfort levels, ages, cycling interests and family status.

Results placed on cycling strategy website.

Asked: What are the barriers to cycling? What are the most important barriers to address?

Prioritize cycling barriers

All three inputs were used to identify the most important barriers to address.

Develops possible actions

Research and review best practices of other bike-friendly cities in North America and Europe. Meet internal stakeholders to explore ways to address the barriers that were identified by external stakeholders and develop a plan of actions, in accordance with the Scoping Report. These new actions combine with current practices and projects to build a bicycle friendly city.

Volunteer Cycling Committee review

City planners shared the draft actions with the committee and answered questions from the committee. This met the criteria set out in the agreed Terms of Reference and fulfilled the engagement obligation of advising “how the consultation affected the decisions and outcomes.”

Report to Committee of Council in June 2011

At the 2011 May 18 SPC on Land Use, Planning and Transportation (LPT), Committee recommended that Council approve Administration to bring forward the requested Cycling Strategy and Pathway Safety Review reports to the SPC on LPT no later than 2011 June.

APPENDIX D – TELEPHONE SURVEY EXECUTIVE SUMMARY

Link to complete report: http://www.calgary.ca/docgallery/bu/trans_planning/cycling/cycling_strategy/telephone_survey.pdf

The City of Calgary conducted a telephone survey with a random sample of 750 adult Calgarians to determine factors that impede citizens from cycling as often as they would like. The survey also examined initiatives that might encourage Calgarians to cycle more often. Based on a cyclist typology that has been employed by other municipalities such as Portland, Oregon, survey respondents were categorized into Fearless Cyclists (2%), Confident Cyclists (20%), Interested Cyclists (51%) and Reluctant to Cycle (28%). These categories were used to gain further insights into what The City could do to encourage more cycling among citizens. HarGroup Management Consultants Inc. was engaged to conduct the survey, which was fielded in September 2010.

KEY FINDINGS

- **Most Calgarians are Interested in Cycling More Often** - The survey results suggest that most Calgarians would like to cycle more often. Indeed, almost six out of ten survey respondents (59%) stated they would generally like to cycle more often. However, when asked specifically about cycling for transportation purposes (e.g. attending social activities, shopping or attending appointments and getting to and from work or school), Fearless and Interested Cyclists expressed greater interest in cycling more often than Confident Cyclists and Reluctant to Cycle respondents. It is worth noting that Interested Cyclists represent approximately half of Calgarians and almost three-quarters of them (72%) indicated they are interested in cycling more often for transportation purposes.
- **Many Calgarians are Concerned about their Personal Safety while Cycling** - There are various kinds of routes that cyclists can use to travel through Calgary. For the most part, Calgarians feel safe cycling on pathways and quiet residential streets, and many feel comfortable on neighbourhood roads designated as bus routes that have specific bike lanes. Levels of comfort decline significantly if these kinds of roads do not have bike lanes; particularly among Interested Cyclists. To further emphasize the point, when respondents were asked to rate specific barriers that might impede Calgarians from cycling more often, the highest rated was concerns about personal safety when cycling in traffic.
- **Other Barriers to Cycling include: Other Priorities, Physical Demands of Cycling, Weather and Distances to Travel** - While concerns about personal safety was ranked highest in terms of being a barrier to cycling, other reasons were common as well. These other factors include other obligations that may prevent them from cycling, cycling being too tiring, the potential of the weather changing when cycling, and distances being too far to travel by bicycle.
- **More Bicycle Lanes, Bike Friendly Pathways, Cycle Tracks and Other Initiatives are Deemed as Encouragements for Calgarians to Cycle More** - The most common suggestions for improvements that might encourage Calgarians to cycle more often include more bicycle lanes and multi-use pathways, and introducing cycle tracks that separate cyclists from both vehicles and pedestrians. Other initiatives that were perceived to encourage cycling among Calgarians include more or better signs and maps that show bike routes and increasing cyclist and motorist knowledge about cycling rules and issues. These kinds of improvements were appealing to all types of cyclists.

APPENDIX E – ONLINE SURVEY EXECUTIVE SUMMARY

Link to complete report: http://www.calgary.ca/docgallery/bu/trans_planning/cycling/cycling_strategy/online_survey.pdf

The City of Calgary offered Calgarians an opportunity to provide input on factors that might impede cycling and identify initiatives that might encourage residents to cycle more often. Findings from the survey are an engagement component in the creation of a Comprehensive Cycling Strategy being developed by The City.

A total of 750 responses were analyzed from the online survey. HarGroup Management Consultants Inc. was engaged to conduct the survey, which was fielded in September 2010, and report the results.

It should be noted that the online survey involved a non-probability sampling process. Respondents were individuals who became aware of the survey through City news releases, on the City blog and on its Twitter account, or word of mouth. As such, the survey results are unrepresentative of any population. The findings only reflect the opinions of those who participated in the survey.

KEY FINDINGS

- Most survey respondents appear to be avid cyclists as they typically cycle daily (39%) or at least once a week (36%) and riding is an extremely important part of their lives (85%). Most respondents (71%) refer to themselves as cyclists when talking to other people. Nonetheless, most respondents (73%) would like to cycle more often.
- Prominent barriers to cycling more often that were identified by respondents included not feeling safe when cycling in traffic (64%), bike racks not being secure enough (58%), not having enough bike racks available (56%), bike routes to destinations being out of the way (53%), and lack of change facilities at destinations (50%).
- Respondents were most likely to have cycled for shopping or appointments (85%) or for social purposes (82%) in the last twelve months. Recreation (66%) and to get to and from work or school (61%) were also common. The most commonly cited reasons for cycling for these purposes were because it is fun or enjoyable, to get exercise and because it is more convenient than other forms of transportation.
- Respondents were given an opportunity to provide suggestions for improvements they thought might encourage them to cycle more often. The main suggestions offered were more bicycle lanes and more pathways integrated into communities. Other prevalent suggestions from respondents included more or better bicycle parking, separate pathways for cyclists and pedestrians, and increased motorist education about cyclists.

APPENDIX F – CYCLING COMMITTEE RESULTS

Link to complete results:

http://www.calgary.ca/docgallery/bu/trans_planning/cycling/cycling_strategy/cycling_committee_priorities.pdf

Cycling committee - results of dotmocracy feedback

Thursday, September 16, 2010

Dotmocracy is a simple method for recognizing points of agreement. In this case, participants wrote down ideas on specially designed paper forms and used stickers to record their level of agreement on each sheet. The 13 committee members were each given 10 stickers to use however they wished - to display agreement with one idea, or disagreement with another. The result is a graph-like visual representation of the group's collective opinion.

Dotmocracy was developed by Jason Diceman; for more information, please see <http://dotmocracy.org>.

