

SHIFTING TO HIGH GEAR

Realizing the Benefits of Accelerated Investment in Cycling



Climate Change

Health

Tourism

Submission to the Finance and Government Services Committee

British Columbia Cycling Coalition

bccc.bc.ca

October 2007



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2 Executive Summary

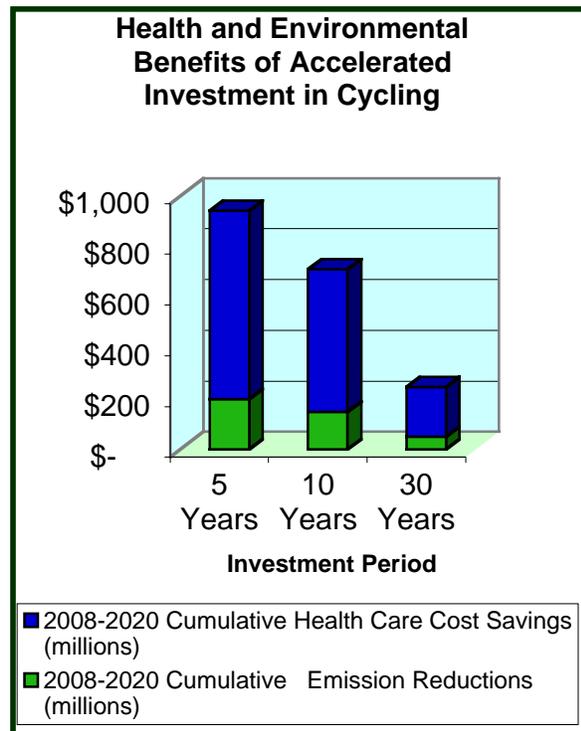
The British Columbia Cycling Coalition (BCCC) is proposing a dramatic acceleration in investment in cycling. This investment in Community Cycling Networks and the BC Soaring Eagle Cycling Routes will enable residents and visitors to safely and conveniently cycle throughout the province. Cycling will become a practical alternative to driving leading to significantly reduced greenhouse gas emissions, congestion and health care costs.

Currently, an estimated total \$50 million a year is being spent in the province on cycling infrastructure. At the current pace of investment, we estimate completion of the cycling networks in the province will require thirty years. Over a 30-year period, this would result in expenditures of \$1.5 billion.

The BCCC is recommending investing this \$1.5 billion over a five to ten year period with an additional \$200 for education, marketing, parking, end-of-trip facilities and bike share programs for a total of \$1.7 billion. To get this initiative off to a fast start, there are \$300 million worth of badly needed cycling improvements, many of which are associated with provincial highways and bridges, which could be built in 2008-2009.

Benefits of this accelerated investment include:

- British Columbia would be a world cycling destination boosting tourism and local retail economy
- British Columbia would be the leader in North America in cycling
- A tripling of cumulative of greenhouse emission reductions from 2008 to 2020
- A significant reduction in health care costs



2.1 Community Cycling Networks

Community Cycling Networks will enable cycling to be a safe and convenient transportation choice for all British Columbians. These complete networks of high-quality bicycle routes will allow both residents and visitors access to destinations throughout BC communities encouraging. Such networks of high-quality routes are needed to encourage people to cycle instead of driving.

2.2 BC Soaring Eagle Cycling Routes

Building on the success of Spirit of 2010 Trails and the Trans Canada Trail, BC Soaring Eagle Routes will be a network of cycling routes linking communities and attractions throughout the province offering visitors and residences wonderful cycle touring experiences. This dramatic increase in cycling tourism will have significant economic benefits to BC communities.

3 Recommendations

To realize the benefits of increased cycling, the BCCC recommends the following to the Province of British Columbia:

Major Initiatives:

1. The dramatically accelerated completion of Community Cycling Networks in British Columbia municipalities to reach a goal of 15% of trips by 2017.
2. The completion of a province-wide network of cycle touring routes, code-named BC Soaring Eagle Cycling Routes by 2017.
3. Partner with the BCCC in the creation of the British Columbia Cycling Centre of Excellence to facilitate the planning, implementation and the marketing of BC Soaring Eagle Cycling Routes and Community Cycling Networks.

Budget Related Measures

1. A commitment of \$150 million dollars per year 2008 and 2009 for a total of \$300 million to fund Community Cycling Networks and to start the construction of BC Soaring Eagle Cycling Routes connecting communities.
2. Work with the municipalities and other agencies to determine the level of funding required for projects that can practically be developed during 2009-2012. The funding levels should be high enough to maximize the significant increases in cumulative GHG emissions reductions and health care savings resulting from the front-loading of investment in cycling facilities.
3. Provide guidance in the 2008 budget funding levels for 2009-2012 so municipalities can include sufficient matching funds for cycling projects in their capital funds.
4. Ensure TransLink has the financial resources to accelerate its investment in cycling. This may require modifications to Bill 43.
5. Implement or give municipalities and TransLink the authority to implement funding measures that will encourage bicycle use such as road pricing; tolls on existing bridges and roads; pay as you drive insurance; carbon taxes on gasoline and diesel; parking taxes; and congestion pricing. This will likely require modifications to Bill 43.
6. Work with the BC Cycling Centre of Excellence to develop and fund cycling marketing and education.
7. Ensure that budgets for all new and upgraded highway, bridge and rapid transit projects include sufficient funds to include high-quality cycling facilities.

8. Offer all Provincial Government staff a generous cycling allowance when using their bicycle while conducting government business. Offer tax incentives for private firms and municipal governments to offer a similar allowance to their staff
9. Establish a parking cash out law similar to that implemented in California¹ to ensure that cyclists, pedestrians and transit riders receive an amount similar to any parking subsidy offered to those who commute by car. At a minimum, establish a parking cash out rule for all provincial government operations.

Other Policy Measures

1. Work with the BC Cycling Centre of Excellence to determine the quality of designs needed to encourage people to cycle instead of drive.

4 The Case for Cycling as a Priority in the Provincial Climate Change Action Plan

The accelerated completion of community bicycle networks will result in significant increase in the near-term realization of reductions of greenhouse gas emissions from now to 2020. More importantly, this accelerated completion will reduce automobile travel in the near future when other efforts to reduce per kilometre emissions have yet to be fully realized.

Further advantages include:

- Significant increases in cycling and thus reduction of GHG emissions can be realized by 2012
- The ability to improve cycling facilities is entirely within the jurisdiction of the provincial government
- The funding required, while significantly greater than current levels, is modest compared to many other measures
- There are no technological barriers
- Cycling has many other environmental, social, health and community benefits
- Many cycling facilities can also be used by pedestrians, in-line skaters, people in wheelchairs and scooters, cross-country skiers and snowshoers
- There is little, if any debate about the positive impacts of cycling
- Cycling is a proven solution in many other jurisdictions
- Leadership in championing a transportation solution that is practical for the majority of people in the world

¹ "California's Parking Cash-Out Law", <http://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm>, State of California, 2006.

5 BC Soaring Eagle Cycling Routes

Building on the success of Spirit of 2010 Trails and the Trans Canada Trail, BC Soaring Eagle Routes will be a network of cycling routes linking communities and attractions throughout the province offering visitors and residences wonderful cycle touring experiences. This dramatic increase in cycling tourism will have significant economic benefits to BC communities.

In addition to significantly reducing GHG emissions and increasing physical fitness levels, creating complete cycling networks in BC communities will enable cycling tourists to safely and conveniently access hotels, stores, restaurants and tourist attractions thereby greatly enhancing their vacation experience. Routes through communities serve both residents and visitors alike.

Québec's Route Verte, a province-wide network of cycling routes, has proven to be very effective at attracting tourists from both around the world and from nearby states and province. This investment will transform British Columbia into a world leader in cycling tourism.

The routes connecting communities will consist of low traffic minor roads, trails and wide shoulders or paths along provincial highways. Ideally paths and trails would be paved to increase the length of the cycling season, increase rider comfort, decrease the physical effort required and improve safety and thus attract the largest number of cyclists possible.

As is the case for roads, major bicycle routes through communities provide access for both residents and visitors. Such major routes would be designated as part of the BC Soaring Eagle Network to provide a wonderful experience for tourists.

"BC Soaring Eagle Cycling Routes" is the current working name of the initiative. One of the first tasks will a branding process that will result in the official name.

6 BC Cycling Centre of Excellence

The BCCC is proposing partnering with the Province of British Columbia in the creation of the British Columbia Cycling Centre of Excellence. The British Columbia Cycling Centre of Excellence will integrate planning, implementation and the marketing of BC Soaring Eagle Cycling Routes and Community Cycling Networks. A market-based approach will ensure high-quality facilities and programs are developed that will encourage a dramatic increase in levels of cycling in British Columbia. An integrated approach will also ensure the effective, timely and efficient use of the resources invested in cycling.

Building upon best practices from around the world proven to be effective in encouraging cycling, the British Columbia Cycling Centre of Excellence will encourage innovation and monitor the effectiveness of measures to further advance the state of the art in the design of cycling infrastructure and marketing initiatives. The BC Cycling Centre of

Excellence will help build cycling expertise in communities around BC ensuring that communities have the capacity to design and build high-quality cycling facilities.

Tasks undertaken by the British Columbia Cycling Centre of Excellence could include:

1. Develop a cycling vision, strategy and action plan for BC
2. Plan the BC Soaring Eagle Cycling Routes
3. Assist in the planning of Community Cycling Networks
4. Market research
5. Brand development
6. Research best practices from around the world
7. Develop guidelines
8. Coordinate with other agencies
9. Work with stakeholder and user groups
10. Provide training on the design of high-quality bicycle facilities
11. Provide design services to municipalities
12. Provide project management services to municipalities
13. Review funding requests from municipalities and other agencies
14. Review plans and monitor implementation
15. Identify and work to secure Right of Ways (abandoned rail lines, active rail lines, hydro corridors, pipeline corridors, forestry roads, new developments, property acquisition)
16. Administer cycling education programs
17. Coordinate route maintenance
18. Monitor and report on progress
19. Market cycling both inside and outside of BC
20. Produce guides, maps and on-line information on the network
21. Develop wayfinding standards

6.1 A Market-Based Approach

A market-based approach will involve treating the cycling experience as the product and potential cyclists as the consumers. The cycling experience includes cycling facilities, end of trip facilities and intermodal connections.

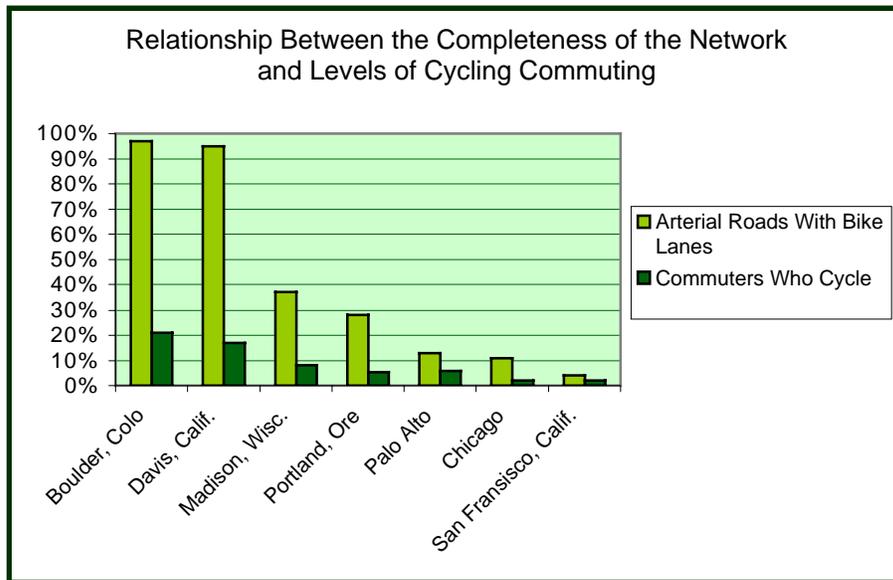
The design and marketing of facilities will be focused on addressing the needs of people who are likely to use the facilities. For example, a route to a school would be designed to ensure parents will feel comfortable cycling with their children, a long distance commuter route would be designed to minimize travel time and a cycle touring route would be designed to access popular tourist destinations. To encourage the use of a route, a promotional campaign focused at the target users would be designed.

This approach would build on experience both in BC and in other jurisdictions and research such as the “Cycling in Cities” survey.

Currently facilities are often designed mainly to fit into financial and engineering constraints. Little or no effort is made to determine the impact of design options on levels of bicycle usage.

7 The Value of Complete Community Cycling Networks

There is strong evidence that given complete networks of high-quality cycling routes, a significant number of people will cycle. The value of such complete network is demonstrated in Davis, California and Boulder, Colorado. With 20% of trips by bicycle, these communities have the highest levels of bicycle usage in North America. This high level of cycling is facilitated by mature networks, which include bike lanes on almost all of their arterial roads and extensive off-road commuter bicycle paths. Residents can simply get on their bicycles with confidence knowing there will always be a safe route to their destination.



The accelerated completion of cycling networks across BC should increase cycling levels in many BC communities to approach the levels experienced in Davis and Boulder.

8 The Potential for Cycling in British Columbia

The recent “Cycling in Cities” survey found that 31% percent of residents in Metro Vancouver identified themselves as cyclists or potential cyclists.² Survey participants also indicated that routes separated from traffic would motivate them to cycle more. As there are such few routes in the region, dramatically increasing such routes should encourage people to cycle much more.

² Cycling in Cities, <http://www.cher.ubc.ca/cyclingincities/survey.html>

8.1 A Dramatic Increase

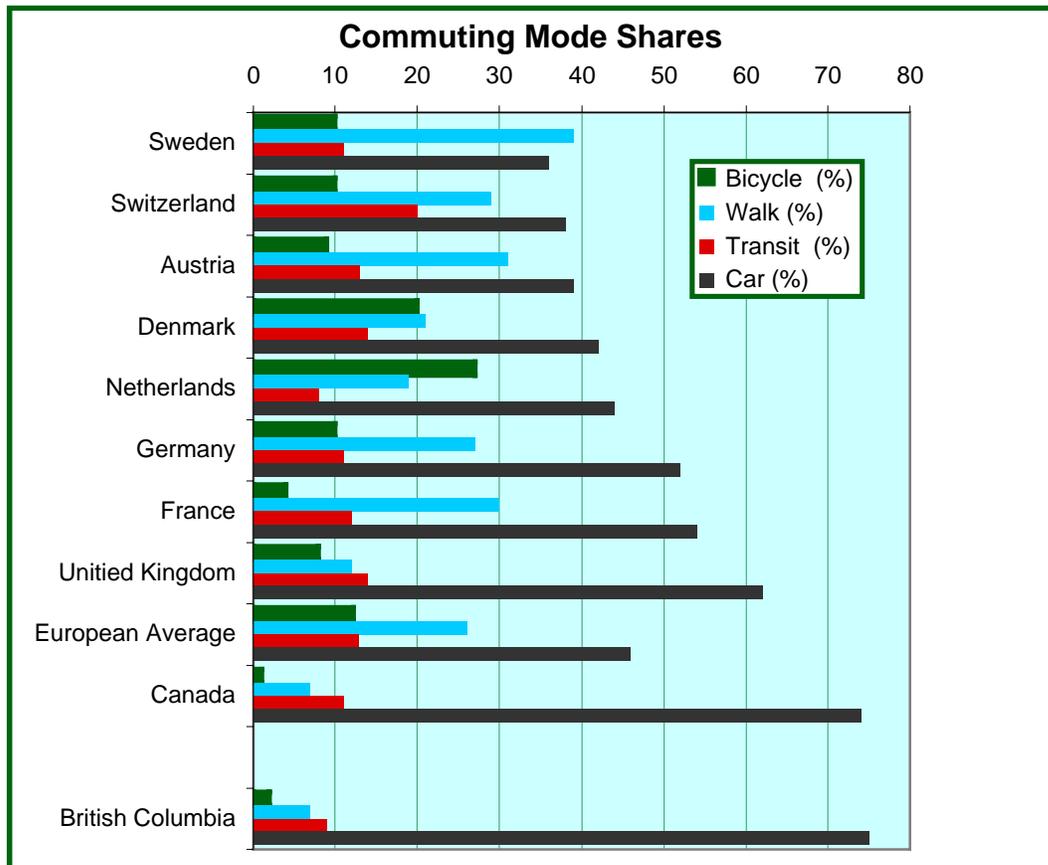
Increasing cycling mode share from 2% to 15% in ten years would be a tremendous accomplishment that few other jurisdictions have realized. For example, Munster, Germany increased cycling trips from 29% in 1981 to 43% in 1992, an increase of 14 percentage points in 11 years. This would indicate that our target is at least possible.

8.2 The Climate is Right

While wet and cold weather is an issue, as shown in the chart below, many regions in Europe with climates similar to British Columbia, experience very high levels of cycling. Of all the provinces and states in North America, BC and the Yukon are tied for the highest levels of cycling. Cycling is also very popular in cities that have steep terrain. With the ever-increasing popularity of electric bicycles, hills are less of an issue.

8.3 Cycling Elsewhere

The chart below illustrates the importance of cycling in providing people with an alternative to driving. Transit usage British Columbia is only slightly below the European average. However, cycling in British Columbia is far below European levels. If cycling levels increased in BC to 15% of trips, automobile usage would decrease to near European levels.



9 Decades of Under Funding

Cycling has been severely under funded for the last several decades. The result of this under funding is a severe lack of bicycle routes that the average British Columbian feels comfortable riding on. The accelerated funding will allow the creation of the high-quality facilities needed for cycling to be as safe and as convenient as. In Metro Vancouver alone, at least \$400 million is required to catch up and complete the cycling network.

10 Funding Requirements

The preliminary estimate for the completion of Community Cycling Networks and BC Soaring Eagle Cycling Routes is \$1.7 billion.

Preliminary Cost Estimates (millions)		
Community Cycling Networks		
Metro Vancouver		
Bridges and Major Connections	\$200	
Community routes (200km @ \$1.5 per km)	\$300	
Total		\$500
Other Communities		\$500
BC Golden Eagle Cycling Routes		\$500
Marketing and Education		\$100
Parking, End-Of-Trip Facilities and Bike Share		\$100
Total		\$ 1,700

10.1 Community Cycling Networks

The \$1 billion estimate based on an initial survey of bridges and major connections needed in Metro Vancouver of \$200 million. In addition to the bridges and major connections, an estimated 200 km of high-quality routes is needed to provide access to destinations around the region. The recently complete study “Cycling in Cities”, indicates that cyclists and potential cyclists prefer separated paths and lanes. Such separated facilities cost average \$1.5 million per km depending on terrain and surrounding land. Creating 200 km of high-quality separated routes would cost around \$300 million thus the total for Metro Vancouver comes to \$500 million. Assuming a similar cost for the rest of the province brings the total to \$1 billion.

Note that while further planning work is required to determine the total cost, the initial survey identified \$300 million worth of projects around the province that could proceed if funding was available.

10.1.1 Experience Elsewhere

10.1.1.1 London, England

For the London Cycling Network, cost estimates based on experience in German cities indicated that an investment of \$400 million would result in an increase of 450,000 trips per day.³ 15% of trips by bicycle would represent an increase of 2.1 million trips per day in BC. Based on the London estimate, the cost would be \$1.9 billion. Cycling trips in London increased at a greater rate than expected so the \$1.7 billion estimate seems plausible.

10.1.1.2 Munster, Germany

Munster, Germany (population 270,000) increase cycling trips up from 29% in 1981 to 43% in 1992 with a budget of \$48 million.⁴ Accounting for inflation, again the \$1.7 billion estimate seems plausible for BC.

10.2 BC Soaring Eagle Cycling Routes

For the BC Soaring Eagle Cycling Routes, the \$500 million estimate is based on the \$200 million cost of Quebec's Route Verte allowing for increased construction costs and the more challenging terrain in BC. Further planning is required to determine the scope and the length of the network. A \$500 million investment will provide a basic network but likely, further expansion and expenditures will be required to build a comprehensive network throughout the province.

11 Current Expenditures

In British Columbia, an estimated \$52 million per year is being spent on cycling infrastructure, of which \$12 million is provided by the province through LocalMotion and the Cycling Infrastructure Partnership Program (CIPP).

Yearly contributions from other sources include:

- Municipalities – an estimated \$24 million
- TransLink - \$6 million in Metro Vancouver
- Federal Government – an estimated \$3 million
- Developers - an estimated \$5 million

At this rate, approximately 30 years will be required to complete the cycling networks in British Columbia.

³ Business Case for Cycling, <http://www.tfl.gov.uk/assets/downloads/businessandpartners/business-case-for-cycling.pdf>, Transport for London, p 5.

⁴ Ibid, p i.

12 Acceleration of Funding

Dramatically accelerating the rate cycling investment from 30 years to 5 to 10 years could increase yearly reductions of GHG emissions by 0.8 mega-tonnes and triple the cumulative reduction in greenhouse emissions in the period from 2008 to 2020. As per kilometre emissions are projected to decrease over time, the sooner the cycling mode share is increased, the greater the cumulative reduction in driving related GHG emissions. Cumulative health care savings from 2008-2020 will almost triple.

2020 Emissions and Health Benefits of Cycling Improvements					
Investment Period	Bicycle Mode Share	Yearly Emission Reductions in 2020 (mt)	2008-2020 Cumulative Emission Reductions (mt)	2008-2020 Cumulative Emission Reductions (millions)	2008-2020 Cumulative Health Care Cost Savings (millions)
5 Years	15%	0.8	8.0	\$ 199	\$ 741
10 Years	15%	0.8	5.9	\$ 148	\$ 561
30 Years	7%	0.3	2.1	\$ 51	\$ 195

Currently, an estimated total \$50 million a year is being spent in the province on cycling infrastructure. At this current pace of investment, we estimate completion of the cycling networks in the province will require thirty years. Over a 30-year period, this would result in expenditures of \$1.5 billion.

We are recommending investing this \$1.5 billion with an additional \$200 million over a five to ten year period for education, marketing, parking, end-of-trip facilities and bike share programs for a total of \$1.7 billion.

This investment will dramatically increase cycling mode share throughout the province making British Columbia the leader in cycling in North America. The recently complete study “Cycling in Cities”, indicates that cyclists and potential cyclists prefer separated paths and lanes.⁵ Such separated facilities cost between \$1 and \$4 million per km depending on terrain and surrounding land use thus the investment required to complete a high-quality network of bicycle routes will be greater than previously expected. This accelerated funding from the province will allow currently planned facilities to be completed to this higher standard and thus avoid the need for expensive upgrades in the future. Further planning work is required to determine accurate estimates for completing networks of high-quality cycling routes both in and connecting BC communities.

⁵ Cycling in Cities, <http://www.cher.ubc.ca/cyclingincities/survey.html>

Accelerated Funding Senerios (in millions)								
Funder	Current Funding		Accelerated Over 10 Years			Accelerated Over 5 Years		
	2007	30 year total	per year	10 year total	increase per year	per year	5 year total	increase per year
Province of British Columbia								
LocalMotion	\$ 10.0							
Cycling Infrastructure Partnership Program (CIPP)	\$ 2.0							
Total	\$ 12.0	\$ 360	\$ 110	\$ 1,100	\$ 98	\$ 260	\$ 1,300	\$ 248
TransLink								
BICS	\$ 2.5							
Canada Line Bridge	\$ 1.5							
Regional Cycling Network (RCN)	\$ 2.0							
Total	\$ 6.0	\$ 180	\$ 18	\$ 180	\$ 12	\$ 36	\$ 180	\$ 30
Municipalities								
Local Motion Matching	\$ 10.0							
CIPP Matching	\$ 2.0							
BICS Matching	\$ 2.5							
RCN Matching	\$ 2.0							
Other (Estimated)	\$ 7.5							
Total	\$ 24.0	\$ 720	\$ 34	\$ 340	\$ 10	\$ 36	\$ 180	\$ 12
Federal								
Public Transit Trust	\$ 2.0							
Urban Transportation Showcase	\$ 1.0							
Total	\$ 3.0	\$ 90	\$ 3	\$ 30	-	\$ 3	\$ 15	-
Other								
Developers (Estimated)	\$ 5.0							
Total	\$ 5.0	\$ 150	\$ 5	\$ 50	-	\$ 5	\$ 25	-
Total	\$ 50.0	\$ 1,500	\$ 170	\$ 1,700	\$ 120	\$ 340	\$ 1,700	\$ 290

13 Funding Partners

Funding partners in this accelerated investment include municipalities, TransLink and the Federal Government. The province is ideally positioned to provide leadership in the accelerated investment in cycling facilities.

13.1 Province of BC

From the point of view of reducing greenhouse gas emissions, revenue from the BC Carbon Trust, carbon taxes, gas taxes and road pricing would be preferred to raising property taxes. The province could also defer investments in road expansion to advance the investments in cycling infrastructure. Improved transit, cycling facilities and the creating of more compact communities will likely eliminate or delay the need for such expansion. Funding for cycling infrastructure can also be used as an incentive for municipalities to create compact pedestrian, cycling and transit oriented communities.

13.2 Municipalities

Municipalities should be encouraged increase their levels of funding but given their small range of funding sources, their percentage of the total funding should be expected to be significantly lower than it is today. In a province where many regions are experiencing extremely high housing costs, increasing property taxes to funding cycling improvements is less than ideal. Depending on the project, the municipal contribution could range from 20-50%. We recommend that the province provide a higher percentage of funding for

projects that are completed to a higher standard to encourage the building of high quality facilities.

Additional cycling funding opportunities for municipalities should be announced soon so such funding can be considered in 2009-2012 capital plans. Municipalities, should, however, be encouraged to shift funding from road construction to bicycle and pedestrian route construction.

13.3 TransLink

Under the formula currently proposed in Bill 36, it is doubtful that TransLink would be in a financial position to significantly increase cycling funding. We urge the provincial government to either ensure TransLink has sufficient funding sources to increase cycling funding or provide additional funding needed for cycling improvements in the region.

13.4 Federal Government

Any increases in federal funding could be used to further accelerate funding or to decrease the contributions required from other partners. The provincial government is ideally positioned to negotiate with the federal government with regards to increased federal funding for cycling. The BCCC will work with other cycling organizations across Canada to encourage the federal government to provide increased funding.

14 Quick Wins

To get the Community Cycling Networks and the BC Soaring Eagle Cycling Routes off to a fast start, there are \$300 million worth of badly needed cycling improvements which could be built in 2008-2009 that have been identified by the BCCC in preliminary consultation with cyclists around the province. Many of these improvements are associated with provincial highways and bridges.

15 Marketing

Effective marketing including educational and promotional campaigns is a critical component of efforts to increase levels of cycling. The BCCC is proposing that levels of funding for such programs be increased to \$10 million per year to ensure that the capital investment in both the Community Cycling Networks and the BC Soaring Eagle Cycling Routes is maximized.

Current initiatives include:

- Bike to Work Week
- Bike Month
- The Commuter Challenge
- Commuter Cycling Skills Courses
- Way to Go

Other possible initiatives include:

- Safe Routes to School Program
- Cycling education in Schools
- Marketing of the BC Soaring Eagle Cycling Routes both inside and outside the province.

16 Greenhouse Gas Emissions Reductions

Dramatically accelerating the rate cycling investment from 30 years to 5 to 10 years could increase yearly reductions of GHG emissions by 0.8 mega-tonnes and triple the cumulative reduction in greenhouse emissions in the period from 2008 to 2020. As per kilometre emissions are projected to decrease over time, the sooner the cycling mode share is increased, the greater the cumulative reduction in driving related GHG emissions. While emissions reductions per year in 2020 are the same for both the 5 and 10 year investment periods, the total reductions from 2008 to 2020 are significantly greater for shorter investment periods demonstrating the value of front-loading the investment in cycling infrastructure.

GHG Emissions Reductions (mega tonnes)			
	Investment Period		
	5 Year	10 Year	30 Year
2008	-	-	-
2009	0.2	0.1	0.0
2010	0.3	0.2	0.1
2011	0.5	0.2	0.1
2012	0.7	0.3	0.1
2013	0.8	0.4	0.1
2014	0.8	0.5	0.2
2015	0.8	0.5	0.2
2016	0.8	0.6	0.2
2017	0.8	0.7	0.2
2018	0.8	0.8	0.3
2019	0.8	0.8	0.3
2020	0.8	0.8	0.3
Total	8.0	5.9	2.1

It is assumed in the calculation of GHG emissions reductions that an increase in cycling will lead to a corresponding decrease in automobile use. While some people are likely to switch from transit to cycling, this will level more space on buses and trains for other people to switch to transit from driving. Some people will likely also switch from walking to cycling. However, a significant portion of the facilities built to improve cycling conditions will also improve conditions for pedestrians and thus encourage people to walk instead of drive.

In the determination of total GHG emissions, an emission level of 411 grams of CO₂ per km is used for 2007 while a target of 324 grams of CO₂ per km is used for 2016. This is determined as follows:

- The average GHG intensity for light duty vehicles for BC was 295 grams CO₂ per km in 2005 and estimated to be 231 grams CO₂ per km in 2016 based on the based on anticipated implementation of the California tailpipe standards that the Provincial Government has committed to.⁶
- City emissions are around 17% greater than average emissions. This was calculated from average fleet fuel economy numbers.
- The extraction, refining and transportation of gasoline increases emissions by around 20%.⁷

Cycling tends to replace short automobile trips in cities and towns. The average trip by bicycle is estimated to be 3.2 km. Emissions are greater for the first few kilometres of a trip especially for cold starts thus it is likely that per kilometre emissions reductions from replacing automobile trips with bicycle trips is greater than the average city emissions per kilometre used here to determine emissions reduction. Many documents state emissions from such short trips can be up to twice that of average emissions. The underlying research behind this claim could not be found thus the impact on the emissions reductions due to cold starts could not be accurately estimated.

17 Health Care Cost Reductions

Accelerated investment in cycling will significantly increase levels of physical fitness and thus reduce health care costs associated with physical inactivity.

	Investment Period		
	5 Year	10 Year	30 Year
2008	\$ -	\$ -	\$ -
2009	\$ 13,732,615	\$ 6,866,308	\$ 2,288,769
2010	\$ 27,807,356	\$ 13,903,678	\$ 4,634,559
2011	\$ 42,226,986	\$ 21,113,493	\$ 7,037,831
2012	\$ 57,006,554	\$ 28,503,277	\$ 9,501,092
2013	\$ 72,133,468	\$ 36,066,734	\$ 12,022,245
2014	\$ 72,991,852	\$ 43,795,111	\$ 14,598,370
2015	\$ 73,834,881	\$ 51,684,417	\$ 17,228,139
2016	\$ 74,664,089	\$ 59,731,271	\$ 19,910,424
2017	\$ 75,485,620	\$ 67,937,058	\$ 22,645,686
2018	\$ 76,302,544	\$ 76,302,544	\$ 25,434,181
2019	\$ 77,108,719	\$ 77,108,719	\$ 28,273,197
2020	\$ 77,904,145	\$ 77,904,145	\$ 31,161,658
Total	\$ 741,198,828	\$ 560,916,754	\$ 194,736,152

⁶ M. Horne, Pembina Institute, via e-mail.

⁷ Macedo et al, "Assessment of greenhouse gas emissions in the production and use of fuel ethanol in Brazil", http://www.unica.com.br/i_pages/files/gee3.pdf, Government of the State of São Paulo, 200, p 32

In 2001, the health care costs of physical inactivity were estimated to be \$211 million in British Columbia.⁸

Assuming this cost escalated with the increase in average per capita costs from \$2,481 in 2001 to \$4085 in 2006⁹, the cost of physical inactivity would be \$347 million in 2006.

As people who cycle engage in other forms of physical activity, not all of the benefits of increased physical fitness can be attributed to cycling. An estimated 34%¹⁰ of the benefits of increased physical fitness can be attributed to cycling for transportation purposes thus the reduction in health care costs attributable to cycling in 2006 is \$118 million.

⁸ Colman and Walker, "The Cost of Physical Inactivity in British Columbia", <http://www.healthservices.gov.bc.ca/prevent/pdf/inactivity.pdf>, B.C. Ministry of Health Planning, 2004, p 18

⁹ "National Health Expenditure Trends, 1975-2006", http://secure.cihi.ca/cihiweb/products/national_health_expenditure_trends_1975_2006_e.pdf, Canadian Institute for Health Information, p 34

¹⁰ By dividing 100 by the total percentage of people engaged in the nineteen most popular forms of physical activity excluding the one we are trying to find, we can obtain an estimate of the amount of physical activity that can be attributed to a particular form of physical activity. This estimate assumes equal benefits for all forms of physical activity. These percentages are taken from the National Population Health Survey, Statistics Canada, 1998/1999.