



CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Date: May 31, 2005
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CC File No.: 5553
Meeting Date: June 28, 2005

TO: Standing Committee on Transportation and Traffic
FROM: General Manager of Engineering Services
SUBJECT: Grant Contribution Toward Cycling Market Research Study

RECOMMENDATION

- A. THAT a grant of \$15,000 be approved as a contribution to the production of a market research study conducted by UBC and Translink focused on substantially increasing cycling mode share.
- B. THAT funding of \$15,000 be provided from the 2004 Streets Basic Capital Account Group CB2EA2EX1- Bicycle Network (Order #30006969).

COUNCIL POLICY

Council approved the 1988 Vancouver Comprehensive Bicycle Plan that listed the four fundamental approaches in providing a safe and convenient cycling environment in Vancouver to include Engineering, Education, Enforcement and Encouragement.

Council approved the 2003-2005 Capital Plan which identified funding for education and encouragement initiatives.

Approval of a grant requires 8 affirmative votes.

PURPOSE

The purpose of this report is to seek Council's approval of a \$15,000 contribution toward the production of an extensive market research study focused on generating a substantially increased transportation mode share for cycling within the GVRD.

BACKGROUND

Cycling is an important, sustainable transportation mode. Engineering has been working and will continue to work on developing an infrastructure of cycling facilities. This has already resulted in an increased mode share for cycling. Apart from engineering, encouragement and education are also important for promoting cycling and have been identified as recommended initiatives in the 1988 Comprehensive Bicycle Plan and the 1999 Bicycle Plan.

On January 18, 2005, Council approved support in principle for a recommendation of the Bicycle Advisory Committee "that Council set an aggressive target for cycling's share of the City's transportation mode split of 10% by 2010".

DISCUSSION

Translink and the University of BC are seeking municipal partners within the GVRD to assist with the production of a detailed study entitled "Cycling in Cities - Understanding People, Neighbourhoods and Infrastructure to Promote an Epidemic of Change". The purpose of the study is to determine how investments in infrastructure, education and promotional programs can best encourage more people to cycle more frequently.

It is anticipated that the proposed Cycling in Cities study will provide useful information that will assist us in designing facilities and programs in such a way as to maximize their effectiveness in increasing cycling mode share. A financial contribution to the study will enable us to provide guidance to the project by sitting on the Project Oversight Committee and to request increased sample sizes from within our boundary in order to maximize the relevance of the study to our local conditions.

A detailed description of the project in the form of an application for federal funding from the Moving on Sustainable Transportation (MOST) program is attached as Appendix A.

FINANCIAL CONSIDERATIONS

The overall budget for this research program is \$250,000. \$160,000 has been provided by Translink and the University of BC. It is anticipated that Federal funding in the range of \$30,000 to \$50,000 will be obtained from MOST. The balance of the funding is expected to be provided by municipal contributions.

The \$15,000 grant can be provided from the 2004 Streets Basic Capital Account Group CB2EA2EX1 - Bicycle Network (Order #30006969).

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Application Form

1. Applicant Information:

Name of Organization	The University of British Columbia (UBC)	
Street Address	(KT) Dept. of Health Care and Epidemiology, 5804 Fairview (AL) University Industry Liaison Office, #103-6190 Agronomy Road	
Town/City	Vancouver	
Province/Territory	BC	
Postal Code	V6T 1Z3	
Telephone	604 822-2041	
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E-mail/Web site	www.ubc.ca www.uilo.ubc.ca	
Name of Project Contact	Dr. Kay Teschke (for technical matters) Angus Livingstone (for administrative matters)	
Title	(KT) Professor, Department of Health Care and Epidemiology (AL) Managing Director, University Industry Liaison Office	
Telephone	(KT) 604 822-2041 (AL) 604 822-8587	
E-mail	kay.teschke@ubc.ca angus.livingstone@uilo.ubc.ca	
Profile of your organization (check all applicable)	<input type="checkbox"/>	Not-for-profit, non-governmental organizations (NGOs)
	<input type="checkbox"/>	Community groups (voluntary groups, community associations, and institutions)
	<input type="checkbox"/>	Organizations and associations for First Nations and Aboriginal Peoples
	<input checked="" type="checkbox"/>	Educational and academic institution
	<input type="checkbox"/>	Labour organizations
	<input type="checkbox"/>	Businesses and industries and their professional associations
Briefly describe what your organization does	post-secondary education and research; faculty in the Dept. of Health Care and Epidemiology conduct research on the determinants of health	

2. Project Description and Work Plan:

Project Title	Cycling in cities: Understanding people, neighbourhoods, and infrastructure to promote an epidemic of change
Project Location(s)	Greater Vancouver Regional District (GVRD)
Submission Period	June 1, 2005
Start Date	September 1, 2005
End Date	March 31, 2007
Project Manager	Dr. Kay Teschke

Project Partners

Key Organizations or Personnel: Describe the nature of partner organization(s), including credentials for conducting this work. List or attach a list of the key people involved with a brief description of their qualifications and experience. If possible, include a short biography as an attachment (1-2 paragraphs).

Personnel at the University of British Columbia

Kay Teschke: Professor, Department of Health Care and Epidemiology, Faculty of Medicine, and School of Occupational and Environmental Hygiene, Faculty of Graduate Studies. Dr. Teschke is Director of UBC's Bridge Program, a research training program linking the policy, health and engineering sciences, and Chair of the Division of Public, Environmental and Occupational Health. Her research is primarily directed at measurement methodologies for epidemiological studies of environmental health issues and modeling determinants of exposure; she has published more than 200 scientific articles and conference abstracts. Kay received her academic training at the University of California at Berkeley (Masters of Public Health) and at the University of Washington in Seattle (PhD, Environmental Health). She is a member of the City of Vancouver Bicycle Advisory Committee.

Role in this project: Co-Chair of Project Oversight Committee; supervision of literature review and framing of data elements; design of work plan and data analysis; oversight of questionnaire design; application to UBC Behavioural Research Ethics Board; supervision of initial mailing to study participants; oversight of GIS variable creation; design and supervision of data analysis; review of reports; writing scientific publications; communication of results to scientific and policy-making audiences.

Peter Schaub: Geographer, Centre for Health Services and Policy Research, College of Health Disciplines and the Human Early Learning Partnership, Faculty of Graduate Studies, responsible for the coordination and development of geographic data resources and visualization. Peter has designed or contributed to three major web/print atlases, and is currently developing two more. He has extensive experience in urban planning and design, urban ecology, and related branches of the natural sciences. He received the Simon Fraser University Dean's Silver Convocation Medal for his BA (honours) in Environmental Geography and will be starting graduate work in the fall of 2005. He has been an active cyclist for many years, including long-distance rides across British Columbia.

Role in this project: GIS mapping of neighbourhood characteristics at the 6-digit postal code for all study subjects; interaction with data analysts and Project Oversight Committee on use and interpretation of mapping data; communication of results to academic geography audiences.

Imelda Wong: Program Manager, CIHR/MSFHR Strategic Training Program Bridging Public Health, Engineering and Policy Sciences (The Bridge Program). Imelda is member of the National Long Distance Triathlon Team. She has been an avid cyclist for 10 years and is an active member of the Krebs Cycle Club, a non-profit organization for all types of cyclists. She mentors new bicycle commuters by teaching them bike handling skills and showing them commuting routes. Imelda is an advocate of safer commuter cycling infrastructure, and succeeded in convincing the City of the Vancouver to develop policies during road construction along designated bike routes.

Role in this project: Member of Project Oversight Committee; responsible for grant accounting; contribution to drafting and review of questionnaires; support in application for ethical review to UBC Behavioural Research Ethics Board; supervision of mailing of introductory letter to study subjects; review of reports; mailing of reports to cities across Canada.

Jason Potter. Bicycle Transportation and Cycling Advocacy Consultant. Jason completed his masters thesis, *Urban Bicycle Transportation*, in the Faculty of Social Sciences and Law at the University of Manchester in the UK. He has conducted an extensive review of infrastructural and social initiatives related to cycling found in exemplar cities throughout the world, and has created an up-to-date database of relevant articles from both academic journals and gray literature sources.

Role in this project: Literature review and survey design consultation (on a voluntary basis) to Project Oversight Committee.

Partner Organizations and Personnel

TransLink: Agency that plans, funds and builds the Greater Vancouver road and transit network; Board members include representatives of the Province of British Columbia, the Greater Vancouver Regional District, and the 22 municipal governments that comprise the region. TransLink and its constituent municipalities are committed to sustainable transportation. They have devoted resources to bike friendly routes, integration of cycling with transit services, and public education campaigns. Personnel from TransLink who are actively engaged in this project include:

Gavin Davidson: Program Manager, Bicycle Planning, Road and Infrastructure Planning, responsible for managing TransLink's capital expenditures on cycling infrastructure throughout the region, integration of cycling and transit services, and planning aimed at increasing the use of the bicycle as a mode of transport. Gavin has a masters degree in Resource and Environmental Management (Simon Fraser, 1997); his thesis examined the economic, social and environmental impacts associated with a range of transportation demand management measures. Gavin has worked on a variety of projects to improve the efficiency and effectiveness of the transportation network, including an examination of the potential for shared ride taxi services in Vancouver, distance-based vehicle insurance for the Insurance Corporation of BC, the highly successful "UPass" program, and medium range transit plans within the GVRD. Gavin was the founder of Better Environmentally Sound Transportation (BEST), the largest independent, not-for-profit group working on transportation and land use issues in Greater Vancouver.

Role in this project: Co-Chair of Project Oversight Committee; review of RFP from research firms to conduct surveys; coordination of municipal government participation in project; contribution to drafting and review of questionnaires; review of research reports; communication of results with members of the TransLink Board, BEST, the Planning Institute of British Columbia, and the American Planning Institute.

Sheila Hartmann: Manager, Marketing Research, responsible for coordinating TransLink's research on current transportation modal shares and future transportation needs. These include a periodic cycling usage and attitude studies (last conducted in 2001) and annual tracking of awareness during "cycling month" (June). After graduating with an MBA (York University, 1979), Sheila entered the field of market research. She has worked as Senior Manager of Consumer Marketing Research for Canada Post, and as a research supplier, working as Vice President for Synovate Research (formerly MarkTrend) and for Nordic Research Group (formerly Campbell, Goodell Research).

Role in this project: Member of Project Oversight Committee; development of request for proposals (RFP) from research firms to draft questionnaire and conduct surveys; contracting research firms; contribution to drafting and review of questionnaires; review of research reports; communication of results to provincial government and municipal government members of the TransLink Board.

Vancouver Area Cycling Coalition (VACC): Volunteer-based non-governmental organization whose aim is to make cycling an integral part of the transportation culture of the Greater Vancouver area. Personnel from the VACC who are actively engaged in this project include:

Jack Becker: Director and Treasurer of the VACC, Director of the BC Cycling Coalition (BCCC), member of the Public Advisory Committee for the Vancouver/UBC Area Transit Plan and the City of Vancouver Bicycle Advisory Committee. Jack has a background in civil engineering (BASC, University of Toronto, 1967) and business (MBA, York University, 1974) and 35 years of experience in construction, transportation (goods movement, analysis, planning, economics, operations, and program management) and procurement of materials and services (contract negotiation and portfolio management). For 12 years now, he has focused his energies on cycling advocacy because of his personal priority for clean air and health. His goal is that people have their choice of transportation modes, without barriers, and that cycling facilities are so inviting that people will prefer to cycle and leave their cars at home. Prior to moving to Vancouver, he was Public Co-Chair of the Toronto Cycling Committee.

Role in this project: Member of Project Oversight Committee; contribution to drafting and review of questionnaires; contribution to development of bikeability and travel time variables; review of research reports; communication of results by VACC and BCCC, and to the City of Vancouver Bicycle Advisory Committee

Mary Sherlock: Member of the VACC, BEST, and the City of Vancouver Bicycle Advisory Committee; commuter cyclist for 35 years. Mary has initiated walking and cycling programs in schools, had bicycle racks installed at her daughter's schools, and was a member of a neighbourhood group that gained the City of Vancouver's support to build a local walking and cycling greenway. She is particularly interested in broadening safe cycling possibilities for children, elders and others who are not presently comfortable with cycling in the Vancouver area. Mary has been employed by the Vancouver School Board for the past 12 years (in special education) and previous to that worked in community organizing: co-founder and coordinator of the Nelson and District Hospice Society; coordinator of volunteers for MediaWatch; project coordinator of West Coast Women and Words residential summer school for women writers; co-founder and organizer of Tenant Hotline; and coordinator of Lawline a legal information service at the Faculty of Law, University of Toronto.

Role in this project: Member of Project Oversight Committee; contribution to drafting and review of questionnaires; contribution to development of bikeability and travel time variables; review of research reports; communication of results by VACC and BEST, and to the City of Vancouver Bicycle Advisory Committee

Canadian Cancer Society: National, community-based organization of volunteers whose mission is to eradicate cancer and enhance the quality of life for people living with cancer; provides financial support for cancer research and delivers community-based support programs and prevention information for all types of cancer.

Stacey Berisava: Community Action Coordinator, Greater Vancouver Region

Role in this project: Member of Project Oversight Committee; contribution to review of questionnaires; review of research reports; communication of results to Canadian Cancer Society, their partners, and politicians throughout the Greater Vancouver Region.

b. Project Description (including brief justification for project)

Use facts and figures if they are available.

Project Rationale

Given the wide range of problems associated with the car as an urban mode of transport (e.g., air, water and noise pollution, increases in green house gases, declines in physical fitness, increases in obesity), there has been growing interest in countries with high rates of automobile use (particularly in North America and Europe) in promoting public transit, walking and cycling as alternatives.

Of these, cycling appears to offer one of the greatest opportunities for change in Canadian cities. The percentage of trips by this mode is currently very low in comparison to what has been achieved in European centres with similar climates and demographics. In Canada on average, cycling represents about 2% of the urban transportation modal split, yet urban cycling rates are 5 times higher in Austria, Switzerland, Sweden and Germany, and over 10 times higher in Denmark and the Netherlands.¹ Although urban Canadians also *walk* less than Europeans, differences in walking modal shares between Canada and Europe are much lower, all less than 2.5-fold.² Variations in the demographics of those who cycle between European and North American centres also support room for growth in this mode of transport. In Germany and the Netherlands, there is virtually no disparity in the proportion of cycling trips made throughout the age range from 18 to over 75 years, and both men and women cycle at similar rates, whereas in North America, including Canada, men in the age range from 16 to 49 are about twice as likely to cycle as women and older men.³ Differences in cycling rates between Canadian cities also suggest opportunities for growth in cycling. As examples, Victoria has the highest cycling share of work commuting trips (4.5%), versus Saskatoon at 2.5%, greater Vancouver and Ottawa at just under 2%, Calgary, Edmonton, Winnipeg, London, Montreal and Quebec City between 1.2 and 1.5% and greater Toronto, Hamilton, and Halifax below 1%.⁴ However, even the cities with the highest cycling modal shares do not approach the continental European *country-wide* urban averages.

Despite recognition of this opportunity, most Canadian municipalities are struggling to accomplish more than modest changes. Many rely on the Transportation Association of Canada Bicycle Facility Design Guidelines to direct infrastructure development, however, these guidelines do not include the many cycling facility design innovations that have been developed in continental Europe or are emerging in the US, where federal transportation funding is tied to the provision of cycling facilities. Many Canadian cities have sponsored market research related to cycling to try to understand the issues, but the focus has been on telephone surveys documenting cycling modal share, usually including only modest sections about features that might improve uptake.⁵ None of this research includes objective data about how respondents' neighbourhood infrastructure is related to cycling.

Project Purpose

The purpose of the proposed project is to gather and analyze data to determine how to accomplish a dramatic increase in cycling modal share in the Greater Vancouver Regional District (GVRD),⁶ the third largest urban centre in Canada and one with climactic conditions that favour year-round cycling. New methods are being developed specifically for this project and will be transferable to other centres in Canada (and elsewhere in the world). Results of the project are also expected to be valuable beyond the study area.

¹ Pucher J and Dijkstra L. Promoting safe walking and cycling to improve public health: Lessons from the Netherlands and Germany. *American Journal of Public Health* 2003;93:1509-1516

² *ibid.*

³ Decima Research. *City of Toronto 1999 Cycling Study, Final Report of Quantitative Results*. Feb. 2000; *op. cit.* Pucher and Dijkstra, 2003; TransLink. *Cycling Performance Scorecard*. June 2004;

⁴ Pucher J and Buehler R. Cycling trends and policies in Canadian cities. *World Transport Policy and Practice* 2005;11.

⁵ *op. cit.* Decima, 2000; *op. cit.* TransLink 2004; Decima Research. *Survey for Region of Waterloo Regional Cycling Plan*, 2002.

⁶ The City of Vancouver has begun budgeting and planning with the goal of "10% by 2010", i.e., 10% modal share by the Winter Olympics.

Because the project partners include TransLink (the transportation coordination agency for Greater Vancouver), individual municipalities (that build infrastructure and develop urban plans), and non-governmental organizations (that promote active transportation, such as Vancouver Area Cycling Coalition and the Canadian Cancer Society), the results will have a direct impact on planning, building, education and promotion for cycling in the region. An overview of how the research results will be used is included in the subsection “Application of Project Results,” beginning on page 9.

Overview of Project Design

Our project design is based on an extensive review of the transportation, health, and urban planning literatures to identify previous studies of cycling rates and of factors thought to influence ridership. This identified three major styles of study. The most common are general population *surveys* to document the number of people who cycle, the numbers of trips by bicycle, and the demographic characteristics of cyclists.⁷ Many of these also ask subjects their *opinions* about whether certain factors might change their mode of transportation, though the list of factors included is usually very limited, and interpretation of results is often difficult because visual aids are not used to ensure a common understanding of terms (e.g., bicycle “path” vs. “lane”) and because objective data is not used to verify stated preferences.⁸ Some recent studies have examined the influence of *objective* data on urban form (e.g., average population density, usual cycling infrastructure, average topography) on differences in cycling rates at the macro-level, i.e., between cities.⁹ Others have used focus groups and other *qualitative* research methods to elicit wide-ranging ideas about factors that influence the choice of bicycle transportation, including such elements as perceptions of the social status of cycling, the influence of friends and family members, the importance of fashion, and an individual’s position in the behavioural change cycle.¹⁰ Many of these ideas have never been incorporated into quantitative studies.

The result of this review is a project design that incorporates elements suggested by all of these study types as well as new components, with the aim of being comprehensive, while focusing on developing information that is actionable. The project will include

1. a *population-based survey* of about 5,000 residents of the Greater Vancouver Regional District to document bicycle ownership and trip share by various transportation modes;
2. a *detailed survey targeted at a subsample* of about 2,000 subjects who own bicycles, that will elicit information on personal characteristics, travel patterns and locations, as well as opinions about a broad range of factors that influence use of current cycling facilities and might change future cycling behaviour;
3. *micro-level mapping* of zones around each respondent’s home with respect to population density, changes in elevation, walkability and bikeability, cycling route density, intersection density, type of cycling infrastructure, speed and volume of vehicular traffic on nearby streets, land use mix, and distances and travel times to cycling routes and destinations.

⁷ for example: *op. cit.* Decima, 2000; US Department of Transportation National Highway Traffic Safety Administration and the Bureau of Transportation Statistics. *National survey of Pedestrian & Bicyclist Attitudes and Behaviors*. 2002; *op. cit.* TransLink 2004; Australian Bicycle Council. *Australia Cycling, Bicycle Ownership, Use and Demographics*. July 2004 (Draft)

⁸ for example: *op. cit.* Decima, 2000; Hunt JD and Abraham JE. Influences on bicycle use. Draft, October 2001; Decima Research. *Survey for Region of Waterloo Regional Cycling Plan*, 2002; *op. cit.* TransLink 2004; Accent Marketing and Research. *The Near Market for Cycling in London*, January 2004

⁹ for example: Nelson AC and Allen D. If you build them, commuters will use them – Association between bicycle facilities and bicycle commuting. *Transportation Research Record*. 1997; 1578:79-83; Dill J and Carr T. Bicycle commuting and facilities in major US cities: If you build them, commuters will use them – Another look. *Transportation Research Board 2003 Annual Meeting CD-ROM*; Rietveld P and Daniel V. Determinants of bicycle use: do municipal policies matter? *Transportation Research Part A*. 2004;38:531-550

¹⁰ for example: Schmidt T and Midden CJH. Changing modal split by a behavioural science approach. *Velo City 87 International Congress*. Groningen, Netherlands, 1987; Mayes M, Halliday M, Hatch O. A qualitative assessment of attitudes to cycling. In *Transport Policy and its implementation. Proceedings of Seminar B held at the 24th European Transport Forum*. 1996; Lawson SD. Do style and fashion discourage non-leisure cycling? *Traffic Engineering and Control*. 1998;39:96-97

¹¹ Personal communication, 2005. Dr. Fred Bass, Vancouver City Councillor and Chair of the Tobacco and Illness Committee of the BC Medical Association’s Council on Health Promotion; Gladwell M. *The Tipping Point: How Little Things Can Make a Difference*, Back Bay Books, 2002

¹² BEST (Better Environmentally Sound Transportation); VACC (Vancouver Area Cycling Coalition); BCCC (BC Cycling Coalition)

A combination of features will distinguish this study and the usability of its results from others:

- The *data elements* that will be included in the detailed survey are based on an extensive review of the scientific literature and surveys from around the world, and therefore cover a wide range of elements not known to be included previously in a single study, ensuring that a full set of actionable issues affecting ridership will be taken into account. For a list of data elements see *Tables 1 and 2 in Appendix A*, on pages 24 and 25 of the “Details of the Work Plan.”
- It will combine in a single study *both* data reported by study subjects *and* objective mapping of their neighbourhood characteristics, and will quantify the relationships between the resulting variables, allowing objective testing of factors that respondents believe will influence their use of cycling as a mode of transportation.
- The mapping will be done at the neighbourhood (*micro*) level, rather than the city (*macro*) level, allowing identification of smaller neighbourhood characteristics that are conducive to cycling, as well as those that are not (e.g., rate of change in elevation, speed and density of motor vehicle traffic, land use mix, types of cycling facilities). This is of added interest in this region because the contributing municipalities have taken different approaches to bicycle infrastructure development; their effects will be examined in this research.
- The surveys will be done at three times during the year (*winter, summer, fall*) to ensure that opinions expressed by study subjects are not biased by the time of the year of the survey. The data analysis will examine whether the patterns of responses differ between seasons, to allow decisions about whether future studies need to consider season in their survey designs. Typical market research is conducted over a short period (days to weeks) that does not represent a full year’s differences in weather and schedules on cycling and opinions about cycling.
- The detailed survey will use *photos* to help respondents distinguish both major and subtle differences in cycling infrastructures, and *maps* to help them locate current cycling facilities near their homes and destinations. Previous surveys (by telephone) have relied on respondents’ abilities to understand the meaning of street references or terms used by transportation professionals. It is noteworthy that even professionals within the Greater Vancouver area use different cycling route terminology from municipality to municipality.
- The detailed survey will determine factors related to *past* and *present* cycling, and compare these to respondents’ stated preferences about what factors will encourage them to cycle more frequently in the *future*. This will allow much greater certainty that resulting investments will in fact deliver changes in cycling modal share.
- The detailed survey will target the sector of *bicycle owners* (estimated in previous TransLink research to be about 50% of the adult population of the region), thus focusing on the most easily identifiable subgroup thought to include the “near market” for cycling, whereas most other surveys have focused on either the whole population or the subsector of current regular cyclists. Evidence from health promotion research (e.g., related to smoking cessation) shows that behaviour change proceeds in an epidemic fashion,¹¹ thus it is vital to understand factors influencing those who are most likely to be the next group to alter their mode of transportation.
- The study will include multiple regression analyses to *quantify the relative impacts of personal, infrastructure, and neighbourhood elements* on use of cycling as a mode of transportation. Previous studies have addressed only a narrow range of elements, and have not measured their impact relative to each other.

Application of Project Results

The information gathered in this research will feed into the Greater Vancouver long range transportation plan (a 20-year blueprint for regional network development, education, promotion, and facility design) that will be completed in 2007. The research will be used to identify how best to allocate operational and capital resources to ensure that investments in infrastructure and promotional programs are effective in increasing cycling modal share. The following description illustrates the importance of the research and its expected impact on planning, building, education and promotion for cycling in the Greater Vancouver region:

- *Planning:* TransLink is in the process of developing cycling facility design guidelines for the GVRD and this research will clarify which types of infrastructure would increase ridership, identify preferred designs, and determine whether innovations introduced elsewhere are applicable here. Additionally it will assess whether guidelines are required to address certain conditions that are common to Greater Vancouver as a whole (e.g., climate) or differ between municipalities (e.g., population densities, motorized traffic, topographies, cultural makeup). Individual regional municipalities are also in the process of developing cycling plans and will make use of the evidence from the proposed research (e.g., the City of Vancouver will complete implementation of its 1999 Bicycle Plan by year-end 2006, and will soon begin developing its plan for the following 5 years).
- *Building:* Between 2004 and 2013, TransLink will invest over \$65 million in cycling infrastructure and much of this investment will be matched by the 22 municipalities of the region, bringing the total investment to over \$100 million by 2013. This research will identify investment priorities for those funds, ensuring that new facilities use evidence about people's needs, barriers, and catalysts. In North America, there is on-going debate between those who advocate "vehicular cycling" vs. cycling on paths separated from traffic. It is likely that to achieve cycling modal shares similar to those in continental Europe, a range of cycling infrastructure will need to be offered; this research will help to identify the circumstances and markets appropriate to the various types. As examples, the research will identify locations for new routes, whether the routes for certain neighbourhoods or target markets need to be on or off-road, whether they need to be direct or avoid steep slopes, whether they need to be coordinated with transit, and whether landscaping will make a difference. It will also evaluate the infrastructure that is currently in place in the region and whether it is likely to support an epidemic of change.
- *Education and promotion:* TransLink currently spends \$250,000 *annually* on education and promotion; this will increase to \$400,000 within the next two years. This investment is expected to be matched by member municipalities, and major contributions are also made by cycling advocacy groups such as BEST, VACC, and BCCC.¹² The proposed research will help to identify and target the promotional efforts that are most effective in encouraging residents to ride and to ride more frequently. A specific example is a planned "end-of-trip facility design manual" that will be distributed to employers, retail facilities, and schools, colleges and universities in the region. The research will also determine potential cyclists' knowledge about current cycling routes, facilities, and riding techniques to help direct what education material needs to be provided and to what target markets. Information on the image of cycling will identify messages to stress when advertising cycling.

The objectives of the project are described in the next section, "Project Goals" and the details of the design are included in Appendix A, "Details of the Work Plan."

c. Project Goals

(Please refer to Guidelines for Funding for the mandatory eligibility and evaluation criteria)

State clearly your project objectives and how the proposed project will address the various eligibility and evaluation criteria. Be specific. If you have several objectives, list only the most important ones.

Project Goal

The overall goal of this project is to provide data to facilitate *evidence-based* urban planning, cycling infrastructure development, and marketing of cycling to produce a substantial increase in cycling modal share in the Greater Vancouver Regional District.

Specific Objectives

The following are the specific objectives of the project:

1. To *develop a survey instrument* that will be used in this study, and that can be adapted for use in studies elsewhere in Canada
2. To *map neighbourhood characteristics*, including new variables on “bikeability” and travel times that take into account factors that impede or facilitate bicycle travel
3. To *conduct population-based and targeted surveys* in the Greater Vancouver Regional District that
 - measure the current share of trips made by cycling and other modes
 - identify and enumerate households with operating bicycles
 - measure personal characteristics
 - document past cycling behaviour and reasons for changes
 - document opinions about factors that might increase cycling behaviour in the future
 - document opinions about current cycling infrastructure and suggested improvements
 - measure effectiveness of cycling marketing messages
 - document opinions about public expenditures for cycling infrastructure
4. To *conduct analyses of the survey and mapping data* to
 - determine which personal characteristics are associated with higher current cycling rates
 - determine which neighbourhood characteristics are associated with higher current cycling rates
 - examine the potential for *change* in mode of transportation to cycling, by considering both past and estimated future cycling patterns
 - determine which personal characteristics are associated with the potential for change in mode of transportation to cycling (i.e., who should be targeted for marketing cycling)
 - determine which neighbourhood characteristics are associated with the potential for change in mode of transportation to cycling (i.e., what neighbourhood characteristics should be developed in other areas to promote change, and what types of neighbourhoods should be targeted for marketing cycling)
 - determine what factors are likely to motivate change in mode of transportation to cycling (i.e., what infrastructure and other improvements should be made to promote change)
5. To *communicate the results* broadly to promote uptake by governments and other agencies that plan urban areas, fund and build cycling infrastructure, promote cycling, or conduct cycling education.

How the Project Addresses the Eligibility Criteria

Addressing the MOST Program Categories

This project fits the following MOST program category: “conduct studies or analyses that contribute to a greater understanding of sustainable transportation issues.” The results of the project will contribute directly to initiatives that address other program categories, including development of evidence-based innovations and outreach to increase cycling.

Targeting the Canadian Public

The project is directed primarily at a specific sector of the Canadian public, i.e., those in the Greater Vancouver Regional District. Both the methodology and the results are expected to be applicable to other urban centres across the country.

The Vancouver region is an excellent location to initiate this type of study, since it is the third largest municipal area in Canada and has climactic conditions that favour year-round cycling, yet still has less than 2% commuting by bicycle on average throughout the area. Therefore it offers a large potential for change in modal share. It also has considerable variation in cycling modal share between neighbourhoods as well as variation in cycling infrastructure, terrain, population, motor vehicle traffic, and cycling route densities. This will allow the effects of these differences on uptake of cycling to be measured.

Shared Funding through Partnerships

This project is built on a partnership between the University of British Columbia Department of Health Care and Epidemiology (providing strengths in study planning, design, and analysis), TransLink (the Greater Vancouver Transportation Authority) and its member municipalities (providing a direct link to users of the study results, as well as a foundation in transportation modal share surveys on which to build and evaluate targeted improvements), the VACC (providing links to the cycling public and expertise in cycling as a mode of transportation), and the Canadian Cancer Society (providing advocacy support to promote health and prevent chronic diseases).

More than 50% of the *cash* funding for this project is from sources other than the Government of Canada, including \$94,000 from TransLink and \$50,000 from participating municipalities. In addition, there is considerable in-kind support for the project from the University of British Columbia (faculty time of 10% FTE for 2 years, staff time of 5% for two years, and student time of 20% FTE for 1 year), the VACC (volunteer time of at least 10% FTE for 2 years), TransLink (staff time of 10% FTE for 2 years), and the Canadian Cancer Society (staff time of 3% FTE for 1 year).

Quantifiable Results

In 2004, commuter cycling modal share in the Greater Vancouver Regional District was 1.7%.¹³ Without the benefit of the proposed research, based solely on current initiatives and marketing, the goal for the region is a 30% increase to 2.2% by 2007. The goal of this research is to create evidence to produce targeted and aggressive changes in infrastructure and education that will add a further 80% increase in cycling modal share to 4% of commuting trips by 2010. Within the most urban core (the City of Vancouver itself), where current commuting modal share is 4.4%, the subtarget is to increase this share to "10% by 2010" in concert with the winter Olympics. Ultimate success as well as progress towards reaching this target will be measured by regular surveys conducted by TransLink, with feedback given throughout the intervening period to allow adjustments in strategies by transportation policy makers, planners, and cycling educators.

Sharing Results and Program Materials

The project includes a communication plan that is directed foremost at transportation policy makers and planners, but that will also involve the public, as well as academic audiences. This is described in detail in the next section, "Sharing Results and Program Materials: Communication Plan."

¹³ Mustel Group, *Interest in Viable Transportation Options among Private Vehicle Drivers*, BCAA/GVTA Research, Quantitative Phase, Burnaby, BC, July 2004

d. Sharing Results and Program Materials: Communication Plan

Clearly define how project-related materials or results will be disseminated to further the program's objective of providing Canadians with practical information and tools for better applying sustainable transportation thinking into their daily lives. (Please refer to Guide under "Sharing Results and Program Materials" page 6)

Communication Plan

The primary target of our communication plan will be transportation policy makers and planners in the Greater Vancouver region (i.e., at TransLink and its member municipalities). The results will be presented in person and in writing to the TransLink Board of Directors, the planning and transportation engineering departments of the member municipalities, and the BC Ministry of Transportation. As appropriate, the results will also be presented to city councils to aid in financial decision making related to planning for cycling, and their sustainability advisory groups (e.g., the "Cool Vancouver Task Force") to aid in coordination of planning related to sustainable transportation. The goal will be to help decision makers use the results to develop the Greater Vancouver long range transportation plan and to implement changes that will increase cycling modal share within each jurisdiction and across the region as a whole.

To reach decision-makers outside the Greater Vancouver Regional District, the final report will be distributed electronically via listserves of BEST, the Planning Institute of British Columbia, and the American Planning Institute, as well as those subscribed to by the VACC. Paper and electronic copies of the final report will be sent to planners and/or transportation engineers of all Canadian municipalities with populations of more than 50,000 (there are about 60 cities in that size range), and to the Transportation Association of Canada.

Part of the implementation process by Greater Vancouver municipal governments and TransLink's Marketing and Public Relations Branch will include marketing of cycling and education measures directed at cyclists, motorists, employers, and the cycling industry. The VACC and BEST will also develop such programs, both on their own and in concert with regional government personnel. Results of the study that are apropos to individuals will be incorporated into on-going communication vehicles, such as cycling guides and maps distributed to over 250,000 households and also made available at libraries, community centres, and bicycle stores (e.g., the Freewheelin' guide distributed by BEST). TransLink will also use print media ads, and ads inside and outside of buses, in Skytrains and at Skytrain stations, on bike racks and lockers, at bus loops, and at park and ride parking lots.

The VACC, TransLink (and their member municipalities), the Canadian Cancer Society, and the University of British Columbia will also publicize the results to the general public by other means available to them. All of these organizations have websites (most are searchable); they will include links to the final report and information about resulting initiatives. TransLink, the Canadian Cancer Society and UBC all have public affairs departments that will issue press releases to highlight the results of the project, so that they will reach the mainstream media, including print, radio, and television. UBC has a Speakers Bureau which will allow members of the public and community groups to invite speakers to discuss the results. The VACC and BEST both have newsletters that each reach thousands of cyclists.

The results will also be published in scientific journals (e.g., *Transportation Research Record*, *American Journal of Public Health*) and presented at academic and policy conferences (e.g., the Transportation Research Board Annual Meeting attended by about 9,000 transportation professionals from around the world; the Transportation Association of Canada annual conference attended by about 600 delegates; the ProWalk/ProBike biennial conference, also attended by about 600 people). These methods of communication are considered the best way of disseminating the *methodology* used in this study, as well as providing a forum for critical appraisal of the results.

e. Work Plan/Key Milestones

Outline key work-plan activities and indicate timelines for the project.

Provide a detailed work plan separately (*try to keep this to no more than 5 pages*).

Overview of the Work Plan and Milestones**1. Survey Design (includes preliminary work prior to application to MOST)**

Complete literature review	March 2005
Complete framework of data elements	June 2005
Complete compilation of questions into framework	August 2005
Complete questionnaire design	December 2005

2. Mapping Neighbourhoods

Complete identification of mapping variables	May 2005
Complete focus groups & consultations to create cycling connectivity variable	October 2005
Complete mapping of all geographic data to 6-digit postal codes in GVRD	March 2006
Link mapped data to <i>winter</i> survey group residential and destination postal codes	April 2006
Link mapped data to <i>summer</i> survey group residential and destination postal codes	August 2006
Link mapped data to <i>fall</i> survey group residential and destination postal codes	December 2006

3. Administration of Survey

Complete ethical review by UBC Behavioural Ethics Review Board	October 2005
Issue RFP for surveys; select and contract research firm	September 2005
Select random sample of subjects	October 2005
Mail <i>winter</i> survey group introductory letters	January 2006
Complete <i>winter</i> survey group population-based survey	February 2006
Complete <i>winter</i> survey group targeted survey, including reminders	March 2006
Mail <i>summer</i> survey group introductory letters	May 2006
Complete <i>summer</i> survey group population-based survey	June 2006
Complete <i>summer</i> survey group targeted survey, including reminders	July 2006
Mail <i>fall</i> survey group introductory letters	September 2006
Complete <i>fall</i> survey group population-based survey	October 2006
Complete <i>fall</i> survey group targeted survey, including reminders	November 2006

4. Data Analyses

Conduct <i>winter</i> survey group data analyses	April 2006
Conduct <i>summer</i> survey group data analyses	August 2006
Conduct <i>fall</i> survey group data analyses	January 2007
Combine data analyses, all groups	January 2007

5. Communication (includes post-MOST work communicating results)

Draft report	February 2007
Circulate report for comments	February 2007
Complete final report	March 2007
Carry out communication plan	April to December 2007

The "Details of the Work Plan" are included as Appendix A.

f. Target Audience

Indicate who will be your target audience (how many and where).

Audiences for this project

There will be a number of target audiences for this research:

- Foremost, the population of the Greater Vancouver Regional District (~2,000,000), particularly the near market for increased cycling, i.e., adults who own bicycles (estimated to be 50% of the adult population ~500,000); we will be interviewing two samples (random sample of 5,000 and targeted subsample of 2,000 with access to a bicycle)
- Secondly, the TransLink Board and personnel in the 22 Greater Vancouver municipal governments, regional agencies (i.e., the Greater Vancouver Regional District), and the BC provincial government (Ministry of Transport) who develop urban plans, design and build transportation infrastructure;
- Thirdly, personnel in the Greater Vancouver municipal governments, regional agencies, the provincial government, and voluntary agencies (e.g., VACC, BEST, Canadian Cancer Society) who promote cycling through marketing and education programs;
- In addition, municipal planning and transportation personnel in the approximately 60 Canadian cities with populations over 50,000;
- The cycling industry: bicycle retail shops, distributors and manufacturers; cycling infrastructure construction and manufacturing industries; cycling marketing and education industries;
- In addition, academic and survey research audiences in Canada and elsewhere in the world who are involved in sustainable transportation and mapping research and are interested in adopting the methodology.
