



Gas Tax & Public Transit Agreements in BC



OUTCOMES REPORT

DECEMBER 2009

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INTRODUCTION

Public infrastructure is essential to the well being of communities in British Columbia. We rely upon infrastructure systems for transportation, water, wastewater treatment, and solid waste management. The quality of these systems is integral to the health, sustainability and economic competitiveness of our communities.



Nearly 53% of public infrastructure in Canada is owned and operated by local governments¹. Much of this infrastructure was built between 1950 and 1970 and is nearing the end of its life cycle². Many communities in British Columbia also require rehabilitated or new infrastructure in order to meet increasing standards and service growing populations. In recognition of the need for all levels of government to play a role in the

development of communities, federal and provincial governments have developed funding programs to support local government infrastructure.

The Gas Tax Fund³ (GTF) and the Public Transit Fund⁴ (PTF) deliver federal funding to support the design and construction of environmentally sustainable infrastructure in communities. Together, the programs provide funding for public transit, community energy, water, wastewater and solid waste management capital projects. The programs will deliver more than \$1.6 billion to British Columbia between 2005-2014.

¹ Restoring Municipal Fiscal Balance, Federation of Canadian Municipalities, p. 39, 2007.

² Restoring Municipal Fiscal Balance, pp. 36-37.

³ Formally, "The Canada-British Columbia-Union of British Columbia Municipalities Agreement on the Transfer of Federal Gas Tax Revenues", signed September 19, 2005. The program also provides funding for capacity building projects. Since recipients are not required to report on outcomes resulting from capacity building activities, these projects are not represented in this report.

⁴ Formally, "The Canada-British Columbia-Union of British Columbia Municipalities agreement on the Transfer of Funds for Public Transit", signed March 31, 2006.

Outcomes Driven Funding

One of the requirements of the GTF and PTF is that funded capital projects must lead to one of three sustainability outcomes: reduced greenhouse gas emissions, cleaner air or cleaner water. As the administrator of the funds, the Union of BC Municipalities (UBCM) has committed to publishing a report on the progress made towards achieving the desired outcomes of both programs⁵.

Canada, in consultation with British Columbia and UBCM, has developed a Performance Measurement Framework (PMF)⁶. The PMF has guided the development of a set of indicators that are the primary sources for the information included in this report.

When designing the PMF, the parties noted that directly measuring a project outcome can be challenging, particularly for smaller jurisdictions. For instance, if a recipient constructs a new cycling lane, the outcome is “reduced greenhouse gas emissions”. It is difficult, however, to directly measure the greenhouse gas emission reductions resulting from the project due to unknown variables (i.e., if there are more cyclists using the street after construction of the lane, what percentage of them have chosen cycling over commuting by car, what kind of car had they been using, and what is the length of their commute?).

Consequently, the PMF recognizes causal links between outputs and outcomes. Projects are measured in terms of the outputs they achieve, and these, combined with the rationale for undertaking the project, provide evidence for the achievement of an intermediate outcome, demonstrating progress towards a sustainability outcome.

For example, assume that Smithville has used Gas Tax funds to complete a project to replace aging pipes in a water system. Under the PMF, this project fits the investment category of “*pipe repair and replacement*”. The new pipe will have fewer leaks than the pipe replaced, conserving water and contributing to cleaner water at the tap. The indicator for Smithville’s project is the number of metres of pipes that have been repaired or replaced. The PMF recognizes this output as contributing to the intermediate outcome of “*improved water quality and safety*”, which leads toward a final outcome of “*cleaner water*”.

The outcomes report gathers together data from 343 projects across British Columbia completed prior to December 31, 2008. The information provided in this report will be aggregated with data from other provinces and territories, to generate national data that is quantifiable and based on actual completed projects.

⁵ For Gas Tax and Public Transit Annual Expenditure Reports from 2006-2009, see www.ubcm.ca

⁶ See Appendix One for the Performance Measurement Framework in its entirety.

Program Results: Achieving Outcomes, Producing Benefits

While the Gas Tax and Public Transit funds are designed to achieve sustainability outcomes, the programs also provide a host of additional benefits for communities. For example, in addition to supporting zero emission transportation, the construction of bike lines also provides a public health benefit by encouraging residents to choose an active form of transit⁷. By considering outcomes and benefits together, we get a fuller picture of the value of the programs for communities. The District of Sparwood, with a population of 3,765, provides a good example.

Profile of A Recipient: Sparwood, BC



The Gas Tax Fund will deliver over \$1.3 million to Sparwood in twice-annual payments between 2005-2014. On average, these investments are equal to 1.8 per cent of the community's revenues over 2006-2008. Through this period, Sparwood has used the funding to rehabilitate a water reservoir and begin work to build a bridge and rehabilitate a sewage treatment plant. In addition, Sparwood also benefited from the

PTF, which contributed to the development of a new regional transit system. We will look at each of these projects in greater detail to consider the outcomes and the benefits from the projects.

The community of Sparwood is divided into two neighbourhoods on either side of the Elk River. In order to service both parts of the community, Sparwood's water and wastewater utilities run beneath the riverbed. Due to the powerful current, these utilities have been exposed and damaged, jeopardizing the quality of drinking water and posing a pollution risk to the Elk River. To address these issues, Sparwood is constructing a new utilities bridge that will prolong the life of the new facilities and make repairs easier to undertake. To provide even greater outcomes, the bridge will also accommodate pedestrians and cyclists. Previously the only options for non-motorized travel between the neighbourhoods were either a dangerous train trestle or a busy highway, meaning that the new bridge will make a significant contribution to community safety. Gas Tax funds covered the cost of pre-design for this project, leveraging an additional \$1.5 million in funding from other programs. Without the initial investment provided through

⁷ The Heart and Stroke Foundation of Canada notes that there is a direct relationship between the built environment and the risks for heart disease and the rates of obesity among Canadians. Heart and Stroke Foundation of Canada, Position Statement, October 2007.

the GTF, it would have taken many more years for Sparwood to begin this needed improvement.

The delivery of this funding in advance of identifying projects has provided Sparwood with a valuable fiscal tool. Due to the age of its reservoir, Sparwood undertook a project to replace the roof and upgrade the venting to avoid contamination. When faced with the potential of project delays due to escalating construction costs, Sparwood was able to use Gas Tax funds to make up the difference and complete the project on time. “The Gas Tax Fund is a case of quality over quantity,” says Barbara Nunes, Sparwood’s Chief Financial Officer. “The annual funding amounts are comparatively small, but because they are flexible, predictable and long-term, they provide great benefit to our community.”

Sparwood is also rehabilitating and relocating its sewage treatment plant with Gas Tax funds. By moving the plant, the District can remove all of the existing lift stations, leading to a reduction in the energy consumed by the facility. The rehabilitation of the treatment plant will also expand its capacity, supporting the expansion of the community. Work is now underway to construct a 675-acre golf and ski resort. Along with creating new jobs, the development will add 800 homes and condominiums to the community, doubling Sparwood’s population by the time full build-out is completed.

Sparwood has also benefited from the PTF. The Regional District of East Kootenay used Public Transit funds to launch a new shuttle bus service linking Sparwood to Cranbrook, the market and services centre for the region. In the first year of service, the new system helped reduce greenhouse gas emissions by carrying 5,668 riders who otherwise would have required transport in an automobile. Ridership grew 9 per cent in the second year of operations, with significant increases during the winter months when driving in this mountainous region is more dangerous. The system is also part of BC Transit’s Health Connections program, providing customized service for residents accessing health services in Cranbrook.

Gas Tax and Public Transit Funding: Renewing Communities

As Sparwood’s example demonstrates, Gas Tax and Public Transit funds are contributing to reduced greenhouse gas emissions, cleaner air and cleaner water in British Columbia communities. In addition, communities are also receiving a range of benefits that will enhance community health, safety, development, mobility, accessibility economic development and local government finance. In order to better represent the value of these programs to B.C. communities, our report will supplement outcomes data with profiles of a variety of recipients to contextualize the results and highlight benefits.

Report Format and Content

UBCM's Outcomes Report is presented in two parts. Part 1 presents outcomes related to TransLink projects, and Part 2 presents outcomes and benefits related to projects completed by local governments in British Columbia.

The GTF in British Columbia provides for all population based funding for the Metro Vancouver area to be delivered to TransLink, the region's transit and transportation authority. This represents almost half of the GTF funding coming to British Columbia. Consequently, TransLink has provided a customized outcomes report highlighting both the cleaner air and reduced GHG emission outcomes required under for GTF projects, and impacts in relation to a range of other sustainability factors. The executive summary, report context, and summaries of impacts and outcomes portions of TransLink's report are presented as Part 1 of this report. The full TransLink report, including the methodology used to develop the summary outcomes is presented as Appendix I.

Part 2 of this report summarizes the outcomes and benefits derived from projects completed by local governments. Outcomes are summarized for each project category, and each category also includes a project profile highlighting the benefits of these projects to communities. Further details are included in Appendix II, which lists each completed local government project, and Appendix III, which provides a listing of indicators by project type.

PART 1: TRANSLINK PROJECT OUTCOMES

TRANSLINK 2009 GAS TAX REPORT: BUS REPLACEMENT AND SERVICE EXPANSION FOR 2008 – EXECUTIVE SUMMARY

The Government of Canada's investment in Metro Vancouver's public transportation system is enabling TransLink to implement solutions for the long-term sustainability of the region. Through the Gas Tax Fund, Public Transit Agreement and Public Transit Infrastructure Program, federal funding is making it possible for TransLink to provide reliable, convenient and real alternatives to the car.



A Vision for Sustainability

In support of Canada's vision for sustainability, TransLink is dedicated to developing and operating an efficient and sustainable public transportation system throughout Metro Vancouver. Since its inception in 1999, TransLink has steadily increased transit ridership by 43%. With a unique mandate for both roads and transit, TransLink is working towards the vision of a balanced and sustainable future set out in Transport 2040, the region's long-term transportation strategy.

Consistent with the goals of federal funding programs, implementing Transport 2040 will change travel behaviours, moving people from single occupant vehicles to the more sustainable modes of travel including transit, walking and cycling. By integrating transportation and land use planning, TransLink is setting the conditions to create transit-oriented communities that encourage greater transit use. Transport 2040 is also supporting federal, provincial and regional targets to reduce greenhouse gas emissions and provide cleaner air quality.

Investing in Sustainable Transit Options

Federal investments in transit services are necessary to realize the vision for sustainability. Since 2005, federal funding has resulted in new fuel-efficient buses being incorporated to expand bus service and replacing the existing fleet with lower emission buses. New customized vehicles are providing commuters with accessible transit options, new SkyTrain cars are in service and a third SeaBus will soon cross Burrard Inlet. Not only are these investments successfully reducing travel times and increasing transit ridership, they are helping to make a difference in the environment, economic and social well being of Metro Vancouver.

Summary of Federal Investments in Sustainable Transit

This table illustrates the transit investments from federal funding from 2005 to 2007.

Fund Year	# of Expansion or Replacement Vehicles	Project Cost/Budget*	Gas Tax Fund
2005/06	119 Conventional Buses	\$58,885,000	\$36,839,064
2006/07	139 Conventional Buses	\$59,933,000	\$36,839,064
2007/08	199 Conventional Buses	\$123,770,000*	\$49,118,752

Year Enter Service	# of Expansion or Replacement Vehicles	Project Cost/Budget*	Public Transit Agreement	Public Transit Infrastructure Program
2006	24 Community Shuttles	\$4,975,000*	\$3,981,939	
2007 2008	30 Community Shuttles 55 Community Shuttles	\$16,732,000*		\$8,763,453
2007 2008	56 HandyDART Vehicles 69 HandyDART Vehicles	\$16,065,000*		\$8,254,259
2009	34 MKII SkyTrain cars	\$147,000,000*	\$36,349,644	\$17,017,712

**Numbers with asterisks are budgeted costs*

Benefits of Sustainable Transportation

This report describes the investment activity and outcomes resulting from federal investments in TransLink's fleet replacement and expansion. Given the time needed to collect data and analyze the impact of investments, only vehicles put into service in 2008 are considered for this report. The table below summarizes the fleet used in the analysis. The analysis excludes Community Shuttle and HandyDART vehicles.

# of vehicles	Purpose	Type	In-Service Date
7 4	Expansion Spare	New Flyer 60-foot low floor	December 2007
12 2	Expansion Spare	High Express Orion 5 high-floor and New Flyer 60-foot low floor	August 2008
20 5 75	Expansion Spare Replacement	Nova 40-foot low floor	June to September 2008

By analyzing factors such as changes in transit ridership, modal share and land use, TransLink can measure the sustainability outcomes of important transit investments. The following facts, figures and observations illustrate the outcomes of federal investments in Metro Vancouver's transit fleet as described above.

- Providing a reliable, frequent transit network with broad service is promoting sustainable community development and improving customer satisfaction with transit service. This will lead to increased transit ridership.
 - The Frequent Transit Network provides 15-minute service, 15 hours per day, 7 days per week on key transit routes.
 - More than 39,000 additional residents and 11,000 additional jobs are now located within a five-minute walk (400 m) of the Frequent Transit Network.
 - As a result of the bus service expansion, on the affected routes passengers wait time is reduced by an average of three minutes during peak periods and by three minutes overall, improving customer satisfaction with public transit.
- Investing in an expanded and improved transit fleet is improving air quality and reducing harmful pollutants, and in turn improving people's health and well-being.
 - Reductions in harmful criteria air contaminant (CAC) emissions have become evident in the first year of the funding programs. The increased access to the Frequent Transit Network provides a viable alternative to the car, reducing the total distance single occupancy vehicles need to travel.
 - With more stringent emission regulations and technology improvements, the new buses will be cleaner and quieter than the retiring fleet.
 - Particulate matter has serious health effects and diesel particulate is classified as a carcinogen. On a health-weighted impact, a 109 kg reduction in particulate matter emissions results in eliminating the equivalent of 2.75 tonnes of emissions that are harmful to health.
 - Almost 3,000 new transit riders are engaging in an extra 10 to 20 minutes of physical activity per day, making citizens healthier and more active.
- The economic and jobs benefits of fleet expansion yielded \$3.2 million in increased fare revenues in the first year, as more people take transit. In addition, investment in more buses created 110 person-years of employment, including 71 driver/operator jobs.
- The investments in the transit fleet means private vehicles are traveling shorter distances, and this is making our roads safer as the number of collisions, property damage and people injured in collisions has declined.

- Realizing greenhouse gas (GHG) emission reductions becomes evident over the five-year period, as ridership builds on new routes and people begin to shift from their cars to transit.
 - While a marginal increase in GHG emissions is experienced in the first year of investment, by year five a net decrease in GHG emissions of 307 tonnes per year or 0.002% of Metro Vancouver's GHG emissions occurs. That is like taking 61 cars off the road each year.
 - Improvements in fuel efficiency of new transit vehicles also result in fewer GHG emissions compared with the retired vehicles.
 - With cars and light trucks contributing 27% of Metro Vancouver's GHG emissions, investments in public transit that support sustainable community development, change travel behaviours and encourage greater transit use will help reduce congestion on roads, minimize carbon emissions, and maintain the liveability of Metro Vancouver.



Investing Today for a Sustainable Future

The investments in transit fleet initiated by the Government of Canada are ensuring that Metro Vancouver will continue to be ranked as one of the most livable regions in the world. While the impacts of major transit projects become more obvious and compelling over the longer term, within the first few years, the positive benefits are becoming evident. By investing in public transit infrastructure today, we are creating a sustainable future for generations to come.

TRANSLINK 2009 GAS TAX REPORT: BUS REPLACEMENT AND SERVICE EXPANSION FOR 2008 – REPORT CONTEXT

The table below shows the vehicles purchased through the Gas Tax Fund, the Public Transit Agreement and Public Transit Infrastructure Program (formerly Public Transit Capital Trust). This report analyzes the impact on sustainability measures for vehicles put in service in the year 2008. This period has been selected to enable time for the service to be established and for the collection of data.

Data collection and service characteristics of Community Shuttle and HandyDART vehicles make measurement difficult for these vehicle types so they have been excluded from the analysis; however, they are an important part of the sustainable transportation picture.

For conventional buses, there are four main schedule changes in the year (December, April, June, and September). The December changes are for service that runs from January to March of the following year, therefore a complete year of service would be the December through to the September change period. Hence the vehicle purchases used for this analysis are those shown in blue in the table below.

Fund	Description	Vehicle Type	Vehicle Quantity	In-Service Date
Gas Tax Year 1 (2005/06)	2006/07 Conventional Expansion Vehicles	CNG - 40 ft	50	Nov-06
PUBLIC TRANSIT AGREEMENT	2006 Community Shuttle Expansion Vehicles	Community Shuttle	5	Nov-06
Gas Tax Year 1 (2005/06)	2005/06 Conventional Replacement Vehicles	Diesel - 60 ft	52	Feb-07
Gas Tax Year 1 (2005/06)	2006/07 Conventional Expansion Vehicles	Diesel - 40 ft	5	Feb-07
Gas Tax Year 2 (2006/07)	2007 Conventional Expansion Buses	Diesel 40 ft - Novas LFS40	51	Sep-07
PUBLIC TRANSIT AGREEMENT	2006 Community Shuttle Expansion Vehicles	Community Shuttle	19	Sep-07
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2007 HandyDART Replacement Vehicles	HandyDART	40	Sep-07
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2007 HandyDART Expansion Vehicles	HandyDART	16	Sep-07
Gas Tax Year 1 (2005/06)	2006/07 Conventional Expansion Vehicles	Diesel 60 ft - New Flyer D60LFR	12	Dec-07
Gas Tax Year 2 (2006/07)	2007 Conventional Expansion Buses	Diesel 60 ft - New Flyer D60LFR	3	Dec-07
Gas Tax Year 2 (2006/07)	2007 Conventional Replacement Buses	Diesel 40 ft - Novas LFS40	75	Dec-07
Gas Tax Year 2 (2006/07)	2007 Conventional Replacement Buses	Diesel 60 ft - New Flyer D60LFR	1	Dec-07
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2007 Community Shuttle Replacement Vehicles	Community Shuttle	30	Dec-07
Gas Tax Year 2 (2006/07)	2007 Conventional Expansion Buses	High Express - Orions 5 Highfloor	9	Apr-08
Gas Tax Year 3 (2007/08)	2008 Conventional Expansion Buses	Diesel 40 ft - Novas LFS40	69	Sep-08
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2008 HandyDART Replacement Vehicles	HandyDART	30	Sep-08
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2008 HandyDART Expansion Vehicles	HandyDART	39	Sep-08
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2008 Community Shuttle Expansion Vehicles	Community Shuttle	4	Dec-08
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2008 Community Shuttle Replacement Vehicles	Community Shuttle	51	Dec-08
Gas Tax Year 3 (2007/08)	2008 Conventional Expansion Buses	Diesel - 60 ft	21	Aug-09
PUBLIC TRANSIT AGREEMENT /				
PUBLIC TRANSIT INFRASTRUCTURE PROGRAM	2009 SkyTrain Mark II Expansion Vehicles	Mark II	34	Nov-09
Gas Tax Year 3 (2007/08)	2008 Conventional Replacement Buses	Hybrid - 40 ft	109	Mar-10

A summary of the results is shown in the table on the next page.

TRANSLINK 2009 GAS TAX REPORT: BUS REPLACEMENT AND SERVICE EXPANSION FOR 2008 – SUMMARY TABLE OF IMPACTS/OUTCOMES

Outcome	Assessment Summary (Year 1)	Forecast Summary (Year 5)
Greenhouse gas (GHG) emissions reductions	(770) t/year	307 t/year
Criteria Air Contaminants (CAC) emissions reductions	2,871 kg/year HC (hydrocarbons) 43,120 kg/year CO (carbon monoxide) (5,759) kg/year NO _x (nitrous oxides) 109 kg/year PM (particulate matter)	4,095 kg/year HC 62,099 kg/year CO (3,899) kg/year NO _x 109 kg/year PM
Noise	10% increase in exposure due to frequency 1% decrease in severity due to fleet improvements	Same as Year 1.
Energy security	Changes in fuel consumption include: (1,022,871) L Gasoline 1,158,753 L Diesel 19,300 barrels of oil (net from above items)	Changes include: (1,466,661) L Gasoline 1,158,753 L Diesel 13,500 barrels of oil (net)
Physical activity	At least 2,866 people are estimated to achieve some new healthy lifestyle benefits	At least 4,039 people
Public health	Impacts of net reduction of CACs are diffused across the region, but include: 2,871 kg/yr HC 43,120 kg/yr CO (5,759) kg/yr NO _x 109 kg/yr PM	Diffused across the region but include: 4,095 kg/yr HC 62,099 kg/yr CO (3,899) kg/yr NO _x 109 kg/year PM
Transit/ land use integration	Frequent Transit Network (FTN) expansion brings an additional 39,075 residents and 10,975 jobs within 400m of FTN level service.	5-10% increase in population and employment above Year 1 levels, subject to trends.
Journey times	Peak period wait time, reduced by 3 minutes on average; Average wait time reduced by 3 minutes overall – approximately a 10% improvement in frequency.	Same as Year 1.
Safety	4 fewer collisions involving property damage and 3 less collisions involving injury; 5 fewer people injured.	6 fewer collisions involving property damage and 5 less involving injury; 7 fewer people injured.
Journey quality	4% increase in customer ratings for 'not being overcrowded'	May decline with increases in ridership.
Customer satisfaction	The overall average service rating increased by 1%	May decline with increases in ridership.
Policy integration	High level of consistency with TransLink policy: reduced vehicle kilometres travelled (VKT); enhanced FTN land use integration, UPass support.	Same as Year 1.
Revenue	\$3,196,248 in additional farebox revenue in Year 1.	\$4,511,575 in Year 5.
Employment generation	110 person-years in year 1 of which 71 are in a driver/operator role.	Same as Year 1.

TRANSLINK 2009 GAS TAX REPORT: BUS REPLACEMENT AND SERVICE EXPANSION FOR 2008 – SUMMARY OF MAJOR OUTCOMES

Although numerous sustainability benefits are already measurable in the first year of implementation of the 2009 Gas Tax bus replacement and service expansion project, during Year 1 an estimated net increase in greenhouse gas (GHG) emissions of 770 tonnes/year was experienced. A typical light-duty vehicle (a car, light truck or SUV with a Gross Vehicle Weight of less than 5000kg.) emits 4-5 tonnes of carbon dioxide (CO₂) emissions per year, so the 770 tonne increase in GHGs represents the equivalent emissions output of



approximately 154 vehicles.

According to the Metro Vancouver “2005 Lower Fraser Valley Air Emissions Inventory & Backcast”, published in December, 2007, the total Carbon Dioxide emissions in Metro Vancouver in 2005 were 14,685,350 tonnes. So 770 tonnes is an increase of 0.005%. This occurred largely as a result of in the increase in transit vehicle kilometres travelled (VKT) (a

consequence of bus service expansion), combined with the fact that ridership takes time to ramp up, and the decline in automobile VKT as a result of modal shift is still to be realized. As ridership increases, the net effect should be a decrease in VKT; by Year 5, there should be a net decrease in GHG emissions of 307 tonnes/year (approximately 61 vehicles, a decrease of 0.002%).

In Year 1, the effects of a decrease in Criteria Air Contaminant (CAC) emissions are already evident as a result of the decrease in automobile VKT and technological improvements to the buses. These reductions include 2,871 kg/year hydrocarbons (HC), 43,120 kg/year carbon monoxide (CO), and 109 kg/year particulate matter (PM), along with a 5,759-kg/year increase in nitrous oxides (NO_x). Metro Vancouver often characterizes emissions on an “Impact-Weighted” basis that reflects the human health impacts that result from exposure to different types of pollutants. In general, carbon monoxide, while a toxic gas, needs to be discounted in order to make its representation in the inventory more in line with the other pollutants. The accepted factor is 1/7. Conversely, particulate matter (PM) has serious health effects and diesel particulate is classified as a carcinogen. In recognition of this, the impact-weighting for PM is 25. Therefore, “impact-weighted” CAC reductions in Year 1 is approximately 6 tonnes of reductions, or 2.3% of the 2005 “impact-weighted” inventory values for Metro Vancouver.

The project results in a decrease in gasoline consumption by 1,022,871L due to decreased automobile VKT. However, as a result of improved bus services and increased transit VKT, diesel consumption increased by 1,158,753L. In terms of

energy security, the project results in a net increase in fuel demand by approximately 19,300 barrels of oil in Year 1.

In Year 1, the project has already begun to positively impact physical activity and public health, with an estimated 2,866 additional people (new transit riders) engaging in an extra ten to twenty minutes of physical activity per day, combined with a net reduction of CAC emissions across the region. In terms of travel safety, the decline in automobile VKT occasioned by the project correlates with a decrease in the number of collisions involving property damage (4) and injury (3) as well as the number of people injured in motor vehicle collisions (5).

Service-wise, frequency increases included in the project result in an additional 39,075 residents and 10,975 jobs being brought within a five minute walk (400m) of FTN-level service (15 minute service, 15 hours per day, 7 days per week). In terms of journey times, passengers on affected routes have seen their wait times reduced by an average of three minutes during peak period and three minutes overall. Before and after comparisons of market research on affected routes reveal a four percent increase in the number of people who consider services to not be overcrowded, while the overall average service rating increased by one percent.

The 2009 Gas Tax bus replacement and service expansion project has a high degree of consistency with the objectives of the key policies in place: the Provincial Transit Plan, the UBCM-administered SPF Agreement for Greater Vancouver, and TransLink's 2008 Transportation and Financial Plan. In terms of project revenue, farebox earnings generated by increased ridership come to an estimated total of \$3,196,250 in Year 1. Based on current ratios of person-years to bus VKT, the three contracts will generate an additional 110 person-years of employment in Year 1, of which 71 are in a driver/operator role.

PART 2: LOCAL GOVERNMENT PROJECT OUTCOMES AND BENEFITS

PROJECT CATEGORY: PUBLIC TRANSIT

PROJECT PROFILE: Increasing Ridership in Saanich

OUTCOMES: Reduced GHGs

BENEFITS: Mobility, Safety

Congested roadways are a source of frustration for urban residents and an obstacle to the efficient movement of goods and services. By providing an alternative to single occupancy vehicles, public transit systems help improve mobility in communities.



The District of Saanich used Gas Tax funds to redevelop a transit exchange that is a hub in the Capital Region's transportation system. By creating new saw-tooth transfer bays at the Royal Oak Transit Exchange, Saanich doubled the capacity of the facility to handle buses arriving simultaneously, improving regional scheduling and service

reliability. The upgrades included 1.3 km of new sidewalks, 1.6 km of new bike lanes and the redesign of a neighbouring intersection to provide safer access for pedestrians and cyclists. A BC Transit ridership count in the years following construction confirms the value of these improvements, showing a 27 percent increase in ridership on an average weekday.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: PUBLIC TRANSIT

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Transit Capital Assets Other than Fleet	13	2,840,069	3,925,836	<ul style="list-style-type: none"> • 40 bus shelters/bays • 10 bike racks • Royal Oak transit exchange ridership increases of 728 from pre-project levels, an increase of 27% • Prince George has had 20% increase at one bus stop and 10% at another
Transit Only Road Improvements	1	7,918	7,918	<ul style="list-style-type: none"> • 60 m. of pullouts/tapers
Intelligent Transportation Systems	1	71,150	71,150	<ul style="list-style-type: none"> • 4 km. transit priority signaling • ridership increased 5% (est.) • 50 second travel time savings per route saved 8,000 tonnes in GHG per annum (est).
Total	15	2,919,137	4,004,904	

PROJECT CATEGORY: ROADS AND BRIDGES

PROJECT PROFILE: Improving Roads in Golden

OUTCOMES: Reduced GHGs

BENEFITS: **Urban Beautification, Economic Development, Leveraged Funding**

The Gas Tax and Public Transit funds make vital contributions to local economies. As one of British Columbia's resort municipalities, the Town of Golden has used Gas Tax funding to implement its Resort Development Strategy.



Golden has taken an integrated approach to the use of funds by developing storm water systems, improving roadways and adding pedestrian facilities. Along with leading towards the achievement of cleaner water and cleaner air, these projects have beautified 7th Street North, the municipality's gateway to Kicking Horse Mountain Resort and the downtown core.

Access to Gas Tax funds has also helped Golden to attract additional investments from other programs. "Gas Tax allocations have helped us leverage several million dollars of infrastructure projects," says Jon Wilsgard, Golden's Manager of Corporate Administration. "By providing long-term funding, the

program provides small communities with a stable base to pursue funding for larger projects." Wilsgard also praises the PTF, which has helped develop the community's first transit system, connecting the downtown with the region's biggest tourist draw and largest employer.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: ROADS AND BRIDGES

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Road improvements to improve traffic flow	14	4,749,904	8,020,857	<ul style="list-style-type: none"> Projects include: traffic circles (5 projects); intersection improvements/turning lanes (3 projects); traffic calming devices (2 projects) and road realignment, widening and/or inclusion of cycling lanes (3 projects)
Bridge Rehabilitation	2	181,385	593,354	<ul style="list-style-type: none"> 2 km of travel distance saved
Road System Improvements to Encourage a Reduction in Single Car Dependency	43	4,820,227	22,842,716	<ul style="list-style-type: none"> 35.4 km of new/improved bike lanes 2.9 km new/improved sidewalks/paths 13 km new/improved roadway cycling ridership increase from 20% to 80% GHG reductions 7.3 tonnes/annum (1 project)
Road Surface Improvements	12	832,536	3,265,872	<ul style="list-style-type: none"> .9 km of sidewalks improved 11.11 km of roads improved to MMCD
Other Road Improvements, focusing on drainage	5	567,593	937,637	<ul style="list-style-type: none"> 255 m of storm sewer, 3 manholes, 6 catch basins and road repaving
Total	76	11,151,645	35,660,436	

PROJECT CATEGORY: PATHS AND TRAILS

PROJECT PROFILE: Improving a Trail Network in Prince George

OUTCOMES: Reduced GHGs

BENEFITS: Improved Mobility, Healthy Living, Public Safety, Leveraged Funding

One of the greatest challenges for transportation planners is designing systems that enhance road safety. As greater numbers of pedestrians and cyclists share roadways with motorists and public transit vehicles, the risk of serious collisions increases.



The City of Prince George has developed an 11 km trail circuit connecting the largest parks in the community with the downtown and riverfront. The trail network, however, faced a major obstacle at the crossing of Highway 16, a four-lane provincial highway. This intersection has an estimated traffic volume of 15,000 vehicles per day, and has seen five collisions involving pedestrians and

cyclists in recent years. As a result, a grade-separated crossing was identified as a priority in the Cycle Network Plan (2001), and the Official Community Plan (2001).

In 2006, the City commissioned the design and construction of a pedestrian underpass with one-third of the cost coming from Gas Tax funding. By making the project viable, Gas Tax funding facilitated the leveraging of additional funds that covered an additional third of the construction cost.

The underpass was opened in Autumn 2007, and has seen frequent use ever since. "The Highway 16 Underpass is a critical link in the City's Heritage Trail System, allowing pedestrians and cyclists to cross a major highway in safety and comfort", said Mayor Dan Rogers. "The underpass is an excellent example of how the Gas Tax funding can encourage the public to use sustainable transportation modes."

AGGREGATED PROJECT STATISTICS AND OUTCOMES: PATHS AND TRAILS

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Paths and trails (including bike and pedestrian paths and sidewalks)	15	2,105,263	5,335,311	13 km of paths/sidewalks built, extended or improved
Total	15	2,105,263	5,335,311	

PROJECT CATEGORY: COMMUNITY ENERGY SYSTEMS

PROJECT PROFILE: Adding Geothermal Capacity in the Kootenays

OUTCOMES: Reduced GHGs

**BENEFITS: Community Recreation, Healthy Living,
Regional Partnerships**

Crawford Bay, like most communities on the East Shore of Kootenay Lake, is relatively isolated from the recreational facilities located in the larger communities of Nelson and Creston.



When School District 8 developed plans for the replacement of the Crawford Bay Elementary Secondary School (CBESS), it recognized an opportunity to provide additional facilities to serve the wider community by including a fitness centre, meeting rooms, arts studios, and a daycare. The Regional District of Central Kootenay supported the project by allocating Gas Tax funding to install

geothermal heating and cooling in the facility. The addition of this system has meant that the new building has completely eliminated the consumption of nearly 6000 litres of propane annually, reducing CO₂ equivalent greenhouse gas emissions of over 9 tonnes. The availability of Gas Tax funds encouraged School District 8 to construct the building to the high sustainability standards, putting CBESS on track to attain LEED Gold certification.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: COMMUNITY ENERGY

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Energy Efficiency Components for Building Retrofits or New Buildings	81	4,971,380	6,205,102	Energy consumption decreases of: <ul style="list-style-type: none"> • 1,667 L of propane • 6,313 L of heating fuel • 7,420 GJ of natural gas • 813,400 kWh of electricity These energy consumption decreases convert to 408 tonnes CO2 equivalent GHG reductions.
Other Building Retrofits	14	184,511	184,577	Cleaner water outcomes resulting from: <ul style="list-style-type: none"> • Install water treatment systems (4 projects) • Water conservation (low flush toilets and low flow showerheads) (4 projects) • Septage/sewer/drainage (5 projects) • Well upgrade (1 project)
Replacement of local government fleet vehicles with energy efficient models	6	634,161	634,161	<ul style="list-style-type: none"> • Decreased volume of fuel consumed (1 project): 654 L per annum • Cleaner air resulting from reduction of PM10, PM2.5 and nitrogen oxide; 90-99% reduction (5 projects)
Clean energy generation projects	3	46,362	47,367	Increase in energy generated off the grid: <ul style="list-style-type: none"> • 1,004.8 kWh per annum
Total	104	5,836,414	7,071,207	

PROJECT CATEGORY: WATER

PROJECT PROFILE: Improving Water Distribution in Dawson Creek

OUTCOMES: Cleaner Water

BENEFITS: Economic Development, Public Safety

A secure water supply is one of the most important services any community can provide. The Gas Tax Fund supports a range of projects to improve and extend drinking water systems. By developing the capacity of these systems, communities support the development of new neighbourhoods and commercial zones.



The City of Dawson Creek used Gas Tax funds to extend the water mainline from the southeastern corner of the community to service a new industrial park adjacent to the Dawson Creek Airport. Construction of facilities and buildings at the park are now underway on the 80 acre site. When completed, the park will host a mix of oil and gas service companies along with other trades and services.

The extension of the main line replaced a line that was too small to provide adequate flows for fire protection. By adopting standards set by the Fire Underwriters Survey, the new mainline improved the fire flows at the Dawson Creek Airport from 700 US gal/min to 1000 US gal/min.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: WATER

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Treatment	7	1,271,145	17,084,685	<ul style="list-style-type: none"> • 5,290 residents served, plus elementary school • gaseous chlorine disinfection replaced by on-site hypochlorite disinfection
Water Intake, Reservoir or Dams	2	281,677	1,251,979	<ul style="list-style-type: none"> • 4,060 m³ increase in water storage capacity
Extension of Pipe to New Users	2	284,326	799,261	<ul style="list-style-type: none"> • 42 new users can be connected to system
Pipe and other system components, repair or replacement or installation	44	2,749,405	6,558,446	<ul style="list-style-type: none"> • 4,723 m of pipes repaired, replaced or installed; 5 new hydrants; 4,557 people served by new pipes • energy improvements (SCADA systems, pump replacements, etc) • rehabilitate aging reservoirs (one example indicates reservoir life is extended by up to 30 years, and serves a population of 7,500)
Metering	4	318,390	318,390	<ul style="list-style-type: none"> • 1,603 new water meters
Other Demand Management	2	10,324	10,725	<ul style="list-style-type: none"> • reduced water usage of 1,879 m³ per annum
Total	61	4,915,267	26,023,486	

PROJECT CATEGORY: WASTEWATER

PROJECT PROFILE: Improving Stormwater Treatment in Williams Lake

OUTCOMES: Cleaner Water

BENEFITS: Species Protection, Recreation
Development

The Williams Lake River, a tributary of the Fraser River, is a key rearing section for pink, coho and chinook salmon as well as rainbow trout. In response to concerns raised by the Department of Fisheries and Oceans, the City of Williams Lake developed a comprehensive management plan to improve the quality of stormwater released into the river.



The first of six phases in the City of Williams Lake stormwater project received one hundred per cent funding through the Gas Tax Fund. By constructing a system to intercept runoff from three catchment areas, the City was able to direct stormwater into an infiltration and detention pond system prior to discharging into the river.

The result is a cleaner river system and a healthier habitat for juvenile and adult fish. The improvements in water quality have also enhanced the development of the Williams Lake River Valley Trail. The removal of storm drains and addition of park benches near the constructed ponds has contributed to a valued recreational asset for the community.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: WASTEWATER

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Treatment	5	1,725,008	4,143,228	<ul style="list-style-type: none"> Wastewater treated to a higher level: 41,000 m³ to 78,000 m³ Reduction of suspended solids, BOD, giardia, and cryptosporidium
Drainage	8	1,364,877	4,971,675	<ul style="list-style-type: none"> 4,805 metres of drainage culverts/ditches
Contamination Reduction	2	57,847	1,497,373	<ul style="list-style-type: none"> 650 metres of bioswales 250 square meters of treatment ponds 5 settlement/treatment ponds; 2 storm sceptor separators
Pipe Extensions	5	374,730	561,504	<ul style="list-style-type: none"> 228 new connections to system
Pipe Repair	7	891,830	1,420,178	<ul style="list-style-type: none"> 2,278 metres of pipe replaced
Separation of storm and sanitary lines	10	320,685	481,809	<ul style="list-style-type: none"> 1,220 metres of pipes separated
Other System Components	22	1,737,080	2,022,732	<p>Cleaner water outcomes through:</p> <ul style="list-style-type: none"> lift station, pumps or other electrical system upgrades (also GHG reductions) septic tank and drainage field upgrades flow monitoring equipment SCADA equipment (also GHG reductions) Aeration equipment Septage tank/lagoon equipment replacements
Total	59	6,472,057	15,098,499	

PROJECT CATEGORY: SOLID WASTE

PROJECT PROFILE: Providing Curbside Recycling in Campbell River

OUTCOMES: Reduced GHGs

BENEFITS: Environmental Education

There is a tangible relationship between community infrastructure and the behaviours of local residents. By investing in new facilities that support recycling, for example, local governments encourage residents to think about waste diversion and consider choices that support sustainability.



By using Gas Tax funding to implement a curbside recycling program for every household in the community, the City of Campbell River discovered that the new service provided a valuable tool for raising environmental awareness.

According to Luisa Richardson,

Chair of Campbell River's Environmental Advisory Commission, the "Blue Box" encourages sustainable choices "because it improves the ease of recycling and helps residents gauge how much waste they are generating". Campbell River coordinated the introduction of curbside recycling with a social marketing campaign that included direct mail, advertising, a partnership with local newspaper, and public outreach at community events.

In the first year the program was introduced, the amount of waste at the landfill was reduced by 782.9 tonnes. The immediate success of the program helped to jumpstart a new seasonal yard waste collection program, which has diverted an additional 550 tonnes of waste. To further maximize the amount of waste being diverted, Campbell River is working towards the implementations of curbside organics collection in 2011.

AGGREGATED PROJECT STATISTICS AND OUTCOMES: SOLID WASTE

Project Type	Number of Projects	GTF Spending	Total Project Cost	Mandatory Outcomes/Outputs Reported
Recycling	6	1,704,223	7,028,952	<ul style="list-style-type: none"> • 7,240-7,680 tonnes of waste per annum diverted from landfills
Rolling stock, bins or containers	1	25,240	25,240	<ul style="list-style-type: none"> • 14, 4 cu yd capacity in-ground bins purchased and installed (GHG reductions; large capacity bins, less trucking of waste)
Other	3	754,904	754,904	<p>Cleaner water outcomes from:</p> <ul style="list-style-type: none"> • Leachate treatment/protection (1 project) • Installation of a scale at landfill, to accommodate tipping fees, resulting in reduced volume; estimated at 900-1200 tonnes/annum (1 project) • Landfill fencing (1 project)
Total	10	2,484,367	7,809,096	