

NATIONAL CLIMATE CHANGE PROCESS:  
TRANSPORTATION ISSUE TABLE

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TAX EXEMPT STATUS FOR EMPLOYER-  
PROVIDED TRANSIT BENEFITS

FINAL REPORT  
JUNE 11, 1999

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**IBI**  
GROUP  
and  
Management of Technology Services

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# Tax Exempt Status for Employer- Provided Transit Benefits

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## EXECUTIVE SUMMARY

Canada is committed, under the Kyoto Protocol, to reduce greenhouse gas (GHG) emissions by 6% relative to 1990 levels by 2008 to 2012. One way in which urban transportation can contribute to the achievement of this goal is to encourage shifts from the private automobile, particularly single occupant vehicles (SOVs), to public transit.

The Canadian Urban Transit Association and others have suggested that one method of inducing these modal shifts (and to maintain current transit ridership) is to put in place tax-exempt employer provided transit programs such as are in place in the United States. At the present time, however, in Canada, if an employer provides a transit pass or subsidies for transit use, these are taxed as employee benefits. A tax exempt program would allow employers to provide transit benefits without employees facing additional income taxes. In this way transit use would be encouraged.

The Transportation Issue Table of the National Climate Change Process therefore commissioned this study to investigate the feasibility of establishing such programs and their potential impact to reduce GHG emissions.

The purpose of this study is to examine the potential effectiveness of changing the tax status of employer-provided transit benefits. A number of proposals for changing the tax status of employer-provided transit and parking benefits are developed and compared in terms of their ability to reduce greenhouse gas emissions as well as their cost effectiveness. The key conclusions of the study, as well as a discussion of implementation issues, are provided below.

## KEY CONCLUSIONS

### Transit Travel is More Environmentally Friendly Than Automobile Travel

With the current load factors that are achieved on Canadian transit systems (typically 40% or more on average in larger urban areas and much higher during peak hours), transit is far more efficient in terms of greenhouse gas emissions per passenger-kilometre than automobile travel. On average, it is estimated that one passenger-kilometre travelled on transit produces 79 grams of CO<sub>2</sub> (GHG equivalents) whereas one person-kilometre travelled by urban automobile produces 254 grams, or more than 3 times as much.

### Transit Mode Shares are Declining

Over the last four decades, the amount of travel made by private automobiles has increased dramatically. At the same time, the amount of travel by public transit has more or less remained constant (increases during the 1970's and early 1980's, reducing since then) resulting in a significant decline in transit's share of trips. Currently, about 80% of all Canadians who travel to work do so using the private automobile. Of the remainder of these individuals, about 10% use transit and 10% walk or cycle.

One of the primary reasons why transit is used so little and why auto mode shares are increasing, is pricing. Since about 1986, the price of transit fares have risen while the costs of owning and operating an automobile have remained relatively constant. There is a fear on the part of transit agencies that if transit fares are increased further the existing base of "choice" transit riders, people who could use other modes, will be eroded away.

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### **Significant Changes in Transit Usage Are Required**

It is estimated that urban transit currently accounts for about 10% of all commuter trips in Canada and 5% of all urban passenger activity in Canada. Significant changes in transit use and mode share will therefore be required to have a measurable impact on auto use. Based on current modal share data for all commuter trips in Canada, nearly a 50% increase in transit use would be required to reduce auto travel by 6%.

Transit systems in Canada report that they have a high level of turnover of passengers. It is therefore necessary for them to develop measures to retain existing riders as well as to attract new riders.

### **Transit-Benefits Programs Are Rapidly Growing in the U.S.**

The United States has, for some time, had various forms of tax-free Federal commuter benefits. Employer-provided parking in the United States is not considered a taxable benefit and as a result, efforts were necessary to ensure a level playing field between auto and transit.

As of June 1998, with the introduction of the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) both employers and employees are allowed significant tax-free transit benefits. The commuter choice provisions of the TEA-21 allow employers to let their employees allocate up to \$65 per month (\$780/yr) of their salary before taxes to pay for transit and vanpool parking. As a result, employees are not charged tax on this proportion of their income. Employers can also exclude qualified transportation benefits from the gross income of employees, thereby saving on payroll taxes. In fact, the employer and the employee can share the cost, both out of tax-free money, of the benefit up to the monthly maximum. Under TEA-21, the maximum tax-free allowance will rise to \$100 per month after 2001.

### **Most Commuter Parking in Canada is Free**

The 1996 Transportation Tomorrow Survey conducted in the Greater Toronto Area (GTA) provides an indication of how many commuters receive free parking. For the entire GTA, nearly 80% of all commuters did not pay for parking at their place of work. Evidence from other areas confirms this.

The treatment of employer provided transit benefits contrasts with that of parking. Although parking provided by employers is theoretically supposed to be a taxable benefit, it is difficult to enforce this. While no conclusions can be made on income tax revenue collection on parking provided to employees, there is reason to believe that the percentage of commuters paying taxes on parking benefits is quite small. Therefore, the fact that most or many auto commuters are receiving free parking which is not taxed while any transit benefits are taxed suggests that there are inequities.

### **Alternative Scenarios**

To test various possible arrangements, four Scenarios were developed for analysis in this study:

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**Tax Exempt Status for Employer-Provided Transit Benefits**

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Scenario	Description
<b>Basic Scenario</b>	<ul style="list-style-type: none"> <li>• Tax exemption for employer-provided transit pass, with and without a cap</li> <li>• No special marketing</li> </ul>
<b>Marketing Based Scenario</b>	<ul style="list-style-type: none"> <li>• Adds proactive marketing programs by transit agencies to the tax-exempt employer-provided transit benefit</li> </ul>
<b>Flexible Benefit Scenario</b>	<ul style="list-style-type: none"> <li>• Adds the option of pre-tax purchase of transit fares, passes or vouchers by employee, or combination of employer and employee benefits to provide greater flexibility, incentive to participate, and equity</li> <li>• for evaluation purposes have assumed that costs are shared 50/50 between employers and employees</li> </ul>
<b>Extended Mode Scenario</b>	<ul style="list-style-type: none"> <li>• Extends tax benefit coverage to van-pools</li> <li>• Adds tax exemption for paid monthly parking at facilities operated by transit agencies</li> </ul>

These scenarios were designed to cover the range of possible impacts of a tax free transit benefits program.

Based on the results of this study, and on recent U.S. experience, it is concluded that more employers are likely to offer benefits to employees under a flexible benefits program where the employee can request a reduction in taxable salary and use before-tax income for the purchase of transit fares.

**Transit Ridership Increases of up to 60% Among Recipients Are Possible**

Given a lack of real experience, estimating the impacts of a tax free transit benefits program was based on judgement in the context of experience elsewhere. Early experience in the United States with low caps on monthly transit benefits suggests that among those employees who accept transit benefits (\$21/month), transit ridership could increase by 25%. In the now well quoted 1993 GAO study of U.S. Federal participation in transit benefits programs, one out of four of the employees who accepted benefits was a new transit user.

Based on the approach adopted for this study, which takes into account both geographic differences and differences in auto and transit commuter characteristics and assumes higher benefit levels, it was estimated that transit ridership could increase by between 37% and 58% for employees in participating workplaces, depending on the type benefits offered and marketing initiatives undertaken. After accounting for the fact that not all employers would necessarily participate in the program, the increases in transit commuting ridership would range from 11% to 35%. The corresponding reductions in automobile use would range from 2.4% to 7.5%.

**GHG Emissions From Commuter Travel Could be Reduced by 4%**

Based on the assumptions outlined in this study, it is estimated that a Basic Scenario transit benefits program could reduce total GHG emissions by commuters in cities with public transit by 1.6% from the



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baseline in 2010. Allowing the Flexible Benefits Scenario would increase this reduction to 2.1% and extending benefits to vanpools (the Extended Mode Scenario) would result in a 4.8% reduction. By the year 2010, the absolute GHG reductions in CO<sub>2</sub> equivalents would range from 102,000 tonnes for the Basic Scenario to 314,000 tonnes for the Extended Mode Scenario.

These emissions reductions are for commuter trips in cities with transit only. The extended mode scenario saves 4.8% of the CO<sub>2</sub> emitted by commuter trips in these cities. When compared to total urban passenger travel the percentage reductions is lower. On the other hand, they are based on possible changes in commuting trips alone; they do not take into account possible changes in non-work trip mode choice.

By itself this means that, a tax exempt transit benefit program would not be the single answer to meet the Kyoto commitment which may require a reduction of several megatonnes from urban transportation alone, depending on how the reductions are allocated between sectors. The program, would however, reinforce and increase the impacts of other similar GHG emissions reduction strategies and, together, the impacts could be significant.

### **The Flexible Benefits Scenario Appears to be Realistic**

This scenario assumes that employers and employees would each pay half of the cost of the transit benefits program but that all of it will be tax-free to the employee. It appears to the authors of this report to be a realistic assumption. The Extended Mode Scenario makes a similar assumption but assumes that such a program could immediately be extended to paratransit modes such as vanpools. Because of this we believe that the Flexible Benefits Scenario is one that might be recommended for immediate implementation and have used it in providing information to be compared with other measures for reducing GHG emissions.

### **Tax Free Transit Benefits Would Have Positive Economic Impacts**

Introducing a tax-free transit benefits program would have different impacts for different stakeholders. Governments, both Provincial and Federal, would experience reduced tax revenues. Employees would ultimately benefit under all scenarios as a result of the tax free transit benefits. Depending on the scenario, employers stand to lose some money as a result of providing a benefit to employees, but these costs would be covered partially through reduced parking costs, or through cost sharing with employees. Transit agencies would benefit from increased fare ridership and fare revenues, but this would be offset by the possible need to increase service levels. Where load factors are presently below capacity, as is the case in some Canadian cities, no increase in costs would be incurred, but in other cities (and in other locations within the same cities), there would have to be some increase in the service provided to handle additional riders.

Based on the estimates presented in this study, the total reduction in tax revenues to the Federal and Provincial Governments in the first year of implementation would amount to \$9 - 12 million per year for the Basic Scenario and \$35 million for the Extended Mode Scenario. These tax revenue reductions would increase to \$77 - 96 million and \$135 million for the Basic and Extended mode scenarios respectively in 2010; for the Flexible Benefits Scenario, the loss to finance departments would be between \$145 million and \$152 million in 2010.

Taking into account the revenue losses to governments only, the program would cost between \$430 and \$950 per tonne of CO<sub>2</sub> reduced in 2010, depending on the scenario considered; for the Flexible Benefits Scenario the estimated costs per tonne of CO<sub>2</sub> reduced in 2010 is between \$770 and \$810. This, of course, is not a true cost but a transfer from governments to transit users.

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## **Tax Exempt Status for Employer-Provided Transit Benefits**

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In terms of real resource costs paid by society, a tax-free transit benefits program would result in significant savings. This is primarily a result of the fact that it is more cost-efficient to move people in cities by public transit than by private automobile. The primary cost savings to society would be through reduced parking costs, reduced road infrastructure costs and reduced congestion costs. Taking into account the offsetting increases in transit costs and savings in personal travel costs and in employee provided parking, the net savings in real costs are estimated to be in the order of \$2,900 per tonne of CO<sub>2</sub> reduced. While this estimate is dependent on the assumptions made regarding the costs of the automobile to society, the important fact is that there would be positive benefits to society in addition to the reductions in GHG emissions. This study has not considered the cost impacts of reductions in ground level pollution, which would produce further cost savings to society due to reduced health impacts.

### **Benefits are Directly Related to Performance**

A key aspect of the tax-free transit benefits initiative is that the cost and benefits are directly tied to the number of people who choose to participate in the program. Unlike some other measures to reduce greenhouse gas emissions, there are no up front costs (besides marginal administration fees) that are required before results are achieved. Transit agencies in particular have a stake in ensuring that the program is successful, otherwise they have nothing to gain. In this respect, the transit benefits initiative is superior to a program that would simply increase funding for transit or reduce fares for passengers.

### **IMPLEMENTATION ISSUES**

Changes to the Income Tax Act would be required to enable the Tax-Exempt Employer-Provided Transit Benefit to be implemented. This could be implemented through the Budget process.

The greatest increase in modal shift from personal vehicles to public transit would occur if:

- legislative changes give employers and employees flexibility in purchasing fare media and in sharing tax benefits from the program;
- the federal tax-exemption is accompanied by aggressive marketing programs by the public transit industry targeted at both employers and employees;
- legislation allows access to tax free benefits in many market segments, where public transit exists;
- legislation and regulation ensure simplicity in program administration for employers.

Transit benefits can be delivered through:

- transit agencies in cities served by one operator;
- public or private commuter services agencies established for the purpose in urban regions served by multiple transit operators, or
- a national public or private commuter services agency serving employers nationwide.

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It is important to note that, although these are in effect new subsidies to the transit industry, transit agencies will only collect them if they can provide a product which is attractive to users. The subsidies vary directly with the success of the transit properties rather than being a simple grant.

In summary, providing tax exempt status for employer-provided transit benefits is a cost-effective means of reducing GHG emissions from transportation in Canada's urban areas served by transit. Real GHG reductions are achievable if this initiative is taken alone and it would work synergistically with other measures if part of a combined package of initiatives. While the federal and provincial governments would experience a reduction in income tax revenues, these represent a transfer to transit riders of \$430 to \$940 per tonne of CO<sub>2</sub> saved while there would be significant savings in resource costs to society estimated to be up to \$3,000 per tonne of CO<sub>2</sub> emissions reduced.

# Tax Exempt Status for Employer- Provided Transit Benefits

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## 1. INTRODUCTION

### 1.1 BACKGROUND

The Transportation Table is evaluating a wide range of possible measures for reducing greenhouse gas emissions from the transport sector. This work is part of the National Climate Change Process to develop a national strategy for meeting Canada's commitment, under the Kyoto Protocol, to reduce greenhouse gas (GHG) emissions by 6% relative to 1990 levels by 2008 to 2012.

In 1995, total Canadian GHG emissions were approximately 619 million tonnes (MT). Of this, 26% (163.5 MT) were attributed to transportation, with about 50% (82 MT) of that attributed to urban transportation. Approximately 78% of urban transportation emissions come from passenger transportation, with the remaining 22% coming from freight movement within urban areas.<sup>1</sup> It is clear that any strategy for reducing GHG emissions from the transportation sector must address urban passenger transportation.

Under a *Business as Usual* scenario, GHG emissions from urban passenger transportation in the 13 largest Census Metropolitan Areas (CMAs), representing more than half of urban travel activity in Canada, are projected to increase by 15% in 2010 relative to 1990 levels.<sup>2</sup> Hence, achieving the Kyoto Protocol target of 6% reduction in emissions from urban passenger transportation implies a 21% reduction relative to 1990 levels.

Approximately 80% of GHG emissions from urban passenger transportation in Canada are attributed to emissions from personal vehicles (automobiles and light trucks). Consequently, strategies for reducing GHG emissions from urban passenger transportation must focus on reducing Single Occupancy Vehicle (SOV) emissions, shifting demand to lower fossil energy consuming modes such as public transit and active transportation (walking and cycling), and transportation demand management measures to reduce total demand, implemented in combination with measures dealing with reducing emissions through technology.

This need to encourage modal shifts to public transit in order to reduce greenhouse gas emissions and other impacts of high car usage is contradicted by the continuing decline in transit shares in the urban areas of Canada. One of the reasons often cited for this is the fact that, unlike in the United States, and many European countries any assistance for transit use provided by employers is treated as a taxable benefit in Canada; at the same time, employer-provided parking is generally not taxed.

The Canadian Urban Transit Association (CUTA) and many of the major transit properties have made a number of proposals to the Government of Canada that this tax treatment of employer provided transit benefits should be changed. A National Task Force was formed in 1997 to press the Federal Government on the issue. This group includes Pollution Probe, the Ontario Lung Association, the Amalgamated Transit Union Canadian Council, the Canadian Labour Congress, the Federation of Canadian Municipalities, and CUTA.

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<sup>1</sup> *Backgrounder: Greenhouse Gas Emissions from Urban Transportation*, IBI Group and Management of Technology Services for the National Round Table on the Environment and the Economy, November 1998, Exhibit 2.5, page 13

<sup>2</sup> *Ibid*, page 62

## ***1.2 PROJECT OBJECTIVES***

The Transportation Table of the National Climate Change Process decided to undertake a study of the potential effectiveness of changing the tax status of employer-provided transit benefits. The objectives of the study as developed by the Urban Passenger Sub-group of the Transportation Table are as follows:

“This study will assess and critique the existing analysis of the GHG reductions possible from options to equalize the tax treatment of employer-provided parking and transit benefits, as well as the relevant costs and benefits, including the health, social, economic and other environmental implications, of the options identified. It will outline the means through which a tax-exempt employer-provided transit benefit initiative could be implemented, identify barriers to implementation, and suggest ways in which these barriers might be overcome.”

The intent is to develop proposals for changing the tax status of employer-provided transit benefits and to estimate the effectiveness of these measures in reducing greenhouse gas emissions.

## ***1.3 ORGANIZATION OF THIS REPORT***

This report is organized as follows:

- Section 2 provides an overview of the Canadian urban passenger transportation markets including historical trends;
- Section 3 is a discussion of the current status of the Canadian public transit industry focussing on the continuing decline in modal share of transit relative to personal vehicle use;
- Section 4 summarizes the use of tax incentives for transit users in other countries, particularly in the United States. The section also discusses the factors that influence market penetration;
- Section 5 reviews the major documents found in our literature review;
- Section 6 assesses the supply and costs of commuter parking in Canada and the extent to which employer-provided parking benefits are taxed;
- Section 7 describes the options for a tax exempt employer-provided transit benefit program and the scenarios used for analysis in this study;
- Section 8 provides estimates of ridership impacts and GHG reductions for the selected scenarios;
- Section 9 evaluates the cost effectiveness of the employer-provided tax exempt transit benefits scenarios;
- Section 10 assesses the economic, social and other environmental impacts of the employer-provided tax exempt transit benefits scenarios;
- Section 11 discusses issues of implementation including barriers and suggestions for addressing them; and

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- Section 12 summarizes the conclusions of the study.

## **2. THE URBAN COMMUTER MARKET**

### ***2.1 HISTORICAL CONTEXT***

Over the last four decades, the amount of travel made by private automobiles has increased dramatically. At the same time, the amount of travel by public transit has remained relatively constant, with a general decline in the past decade following increases in the previous two decades, resulting in a very significant decline in the modal share of transit trips. As discussed later in this report, the environmental impacts of the proliferation of automobiles has a very significant impact on GHG emissions. Exhibit 2.1 illustrates the growing "gap" between automobile and transit travel in urban areas.

#### **Exhibit 2.1: Historical Trends in Canadian Urban Passenger Activity (1950 - 1994)**



Source: Based on data prepared by IBI Group for the State of the Environment Indicator Series

### ***2.2 SUMMARY OF PASSENGER TRANSPORTATION ACTIVITY IN CANADA***

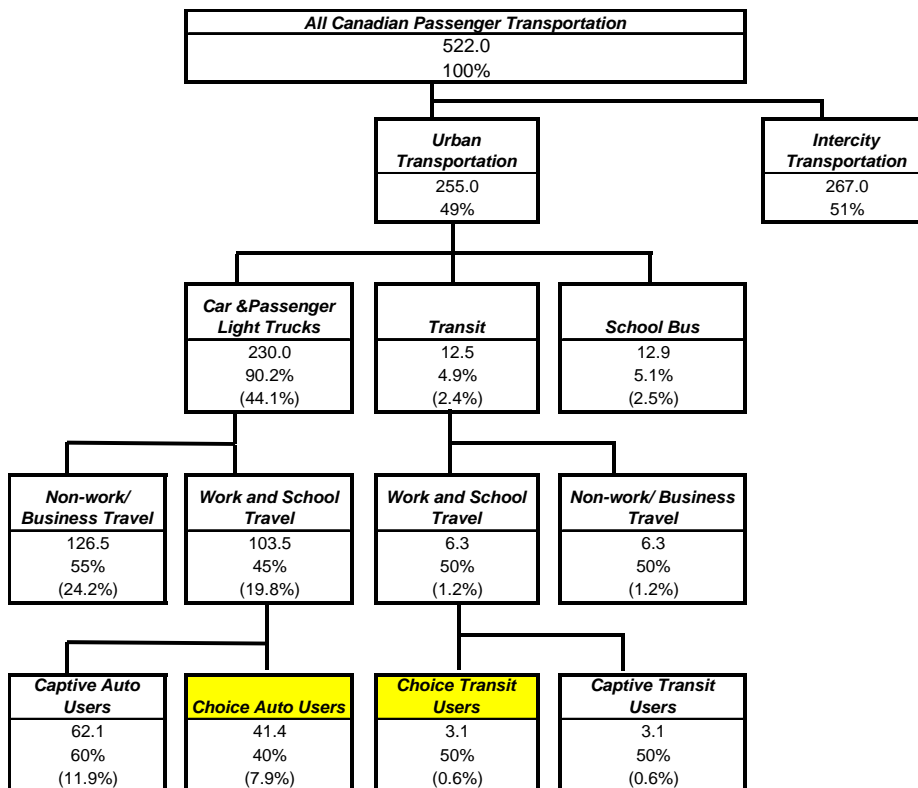
Gaining an understanding of the current passenger transportation market in Canada is fundamental to this study in order to determine how much travel would be impacted by proposed policies and in turn, how much GHG reduction potential exists. Exhibit 2.2 provides a breakdown of Canadian passenger transportation activity in 1995. As shown, urban transportation accounts for roughly 50% of all passenger activity with intercity (and non-urban) travel making up the remainder. Of the urban travel, automobiles and light trucks account for about 90% of the total passenger-kilometres. Public transit and school buses each account for about 5% of the remaining amount. Since this study is looking at employer-provided transit benefits, it is reasonable to assume that work trips are of primary interest, although it is important to note that the policies would have impacts on non-work travel as well. Based on information from the various transportation surveys in the large metropolitan areas, it is estimated that roughly 45% of all auto trips and 50% of all transit trips are work or school related.

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Of the work-related trips, it is estimated that more than 40% of auto travel could be made using an alternative mode, including transit. These trips represent the primary new market to which employer-provided transit benefits would apply. As shown on Exhibit 2.2, they also account for a significant portion of the total Canadian passenger travel activity (8%). Again, it is important to recognise that there are many non-work trips that would be impacted by employer-provided transit benefits, but the impacts of modal shifts in non-work trips has not been quantified.

Available evidence presented later in this report suggests that about half of all transit users are “choice” riders who have access to alternative means of commuting. Choice transit riders are subject to significant annual turnover as they shift to automobiles and are influenced by other factors in their choice of mode. If transit is to provide increased mode share, it will be imperative that future policies ensure the retention of choice transit riders, as well as attracting new riders. This point is discussed further in Section 2.5.

**Exhibit 2.2: Summary of Canadian Passenger Transport Activity in 1995 (Billion Pass-kms)**



XX.X - billion passenger-kilometres  
 XX% - proportion of previous total  
 (XX%) - Percent of total Canadian Passenger Travel

**Source:** Rows 1 to 3 – Transport Canada, *Foundation Paper on Climate Change*; Rows 4-5 – Based on selected transportation surveys in large urban areas (e.g. the Transportation Tomorrow Survey in Toronto)



### 2.3 JOURNEY TO WORK MODAL SHARES IN CANADA

Journey to work information which was collected as part of the 1996 Census provides a basis for examining modal shares for work-related travel in Canada<sup>3</sup>. Exhibit 2.3 provides a summary of the mode shares for all of Canada. In 1996, there were some 13.3 million working people of which 12.2 million reported that they had a usual place of work other than home. Of these 12 million people, 73% reported that they drove to work in their automobile and another 7% reported that they travelled as an automobile passenger. Of the remaining people, 10% took transit, 7% walked and 1% used a bicycle.

**Exhibit 2.3: Usual Mode of Transportation to Work (Canada - 1996 Census)**

	<b>Total</b>	<b>Percent</b>
Car, truck, van as driver	8,934,025	73.3%
Car, truck, van as passenger	899,340	7.4%
Public Transit	1,233,870	10.1%
Walked to work	850,855	7.0%
Bicycle	137,435	1.1%
Other Method	127,885	1.0%
<b>Total</b>	<b>12,183,410</b>	<b>100%</b>

Source: Statistics Canada, *Mode of Transportation to Work Data*, March 17, 1998.

As shown on Exhibit 2.4, the auto mode share varies substantially among Canadian urban areas. Cities with lower auto mode shares obviously have higher transit mode shares, as well as higher walk and bicycle mode shares. The main factor influencing transit usage appears to be population density (e.g. a city must reach a certain population and density to justify "higher order" rapid transit services). Clearly, the size of urban areas and transit services provided will have an impact on the potential effectiveness of employer-provided transit benefits programs.

It is interesting to put into perspective the impact of changes in transit mode split on auto mode split. Exhibit 2.5 presents a simplified example of the levels of transit mode split increases that are required to have a significant impact on auto use. Assuming a direct relationship (e.g. all transit increases would come from auto) the graph indicates that a 30% increase in transit use, which is thought to be achievable among potential transit benefits recipients, would result in an approximate 4% reduction in auto person trips. A 10% reduction in auto person trips would require a 75% increase in transit person trips. This exhibit highlights the fact that to resolve GHG emissions from the transportation sector, many actions will be required.

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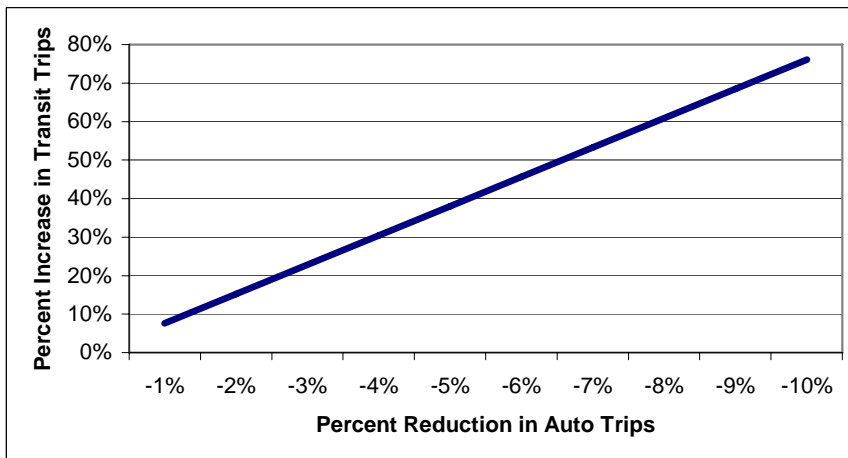
<sup>3</sup> Statistics Canada, The Daily, *Mode of Transportation to Work Data*, March 17, 1998.

**Exhibit 2.4: Employed Labour Force Driving to Work, Census Metropolitan Areas (1996)**



Source: Statistics Canada, *Mode of Transportation to Work Data*, March 17, 1998.

**Exhibit 2.5: Example of Relationship Between Transit and Auto Mode Shares**



Source: Based on Statistics from Exhibit 2.3

#### **2.4 CHARACTERISTICS OF TRANSIT AND AUTO COMMUTERS**

A commuter's travel choices depend on several factors. The most important of these include: travel cost, travel time, comfort and the availability of modes. The purpose of this section is to explore the influence of some of these factors on travel trends and modal choice. Many of these comparisons are made possible

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through data collected in the recent Transportation Tomorrow Survey (TTS) conducted in the Greater Toronto Area in 1996. In particular, the 1996 TTS asked the following questions of survey respondents:

- Do you have a transit pass?
- Is there free parking at your usual place of work?

The above data can be combined with information on each traveller's actual modal choice to determine the impacts of parking availability and transit pass use. With the TTS data, it is also possible to look at trends by geographic area (e.g. Central Area vs. Inner Suburbs vs. Outer Suburbs).

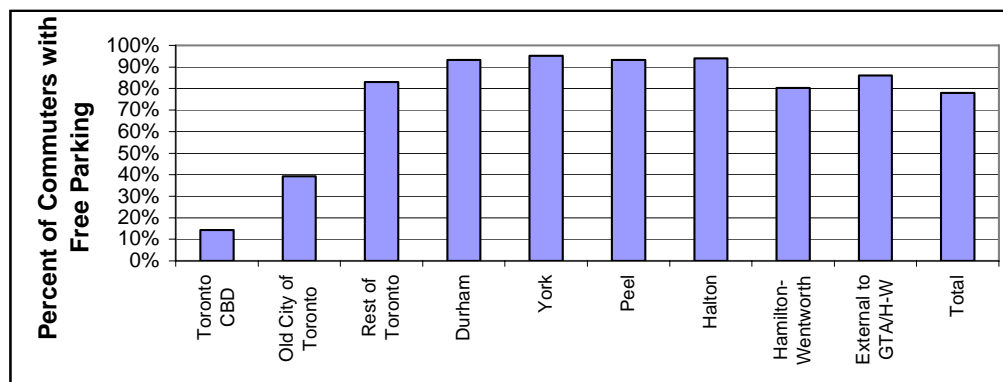
### 2.4.1 Extent of Free and Paid Parking

Proponents of tax-free transit benefits programs argue that many auto commuters receive free parking. The TTS data provides a good indication of how many people do not pay for parking at work. It does not distinguish between employer-paid parking and other free parking, and it does not ask whether or not tax is paid on this benefit.

As shown on Exhibit 2.6 below, the extent of free parking in the GTA and surrounding areas is significant. About 78% of all employees in the GTA+<sup>4</sup> do not pay for parking at their place of work. Of the 22% who do pay for parking, most are employed in the downtown area.

These figures compare well with figures elsewhere. For example, a recent study in Vancouver estimates that 85% of all commuters in urban areas park free at work<sup>5</sup>. The same study indicated that a public opinion poll survey in Greater Vancouver in 1996 found that over 55% of those surveyed received a parking subsidy at work. A study in Ottawa concluded that "users of parking facilities pay directly for about \$39.3 million or just under 25% of the total cost of parking." This figure is inclusive of all parking spaces, either free or paid.<sup>6</sup>

**Exhibit 2.6: Geographic Distribution of Paid and Free Parking in the Greater Toronto Area (1996)**



<sup>4</sup> The term GTA+ is used in this report to describe the Greater Toronto Area (the City of Toronto and the Regions of Durham, Halton, Peel, and York) plus the Region of Hamilton-Wentworth.

<sup>5</sup> *A Comprehensive Parking Management Strategy for Greater Vancouver*, Urban Systems Limited, September 1996.

<sup>6</sup> The Regional Municipality of Ottawa-Carleton, Planning Department, *The Cost of Parking the RMOC*, prepared by M.M. Dillon Limited, February 1997.

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Source: 1996 Transportation Tomorrow Survey data, The Data Management Group, University of Toronto.

### 2.4.2 Transit User Characteristics

Exhibit 2.7 provides a breakdown of employees in the GTA according to whether or not they use transit, whether or not they have a driver's licence, and whether or not there is a vehicle in the household. As expected, individuals with no automobile and no licence are the highest users of transit. 69% of these individuals travel to work by transit. Trends are similar for individuals who have a driver's licence, but do not have access to a vehicle. What is somewhat surprising is that more than 50% of all employees using transit to get to work are licensed drivers and have access to a vehicle (this vehicle may or may not be used by another household member) often referred to as "choice" riders. Many of these people could conceivably switch to the auto mode if transit costs keep escalating and auto costs decreasing. The transit mode shares for all employed individuals with access to a vehicle is only 14%.

**Exhibit 2.7: Characteristics of GTA Employees**  
(Greater Toronto Area and Hamilton-Wentworth – 1996 TTS)

	Employees		
	No Licence	With Licence	Total
<b>No Access to Vehicle</b>			
transit users <sup>(1)</sup>	59,400	61,200	120,600
other mode users	27,100	32,000	59,100
% using transit	69%	66%	67%
<b>Access to Vehicle</b>			
transit users <sup>(1)</sup>	76,300	220,800	297,100
other mode users	83,800	1,756,300	1,840,100
% using transit	48%	11%	14%
<b>Total</b>	<b>246,600</b>	<b>2,070,300</b>	<b>2,316,900</b>
Total Transit Users	417,700		18%
Total Other Modes	1,899,200		82%
Total Commuters	2,316,900		100%

Note: <sup>(1)</sup> Includes employees who made at least one daily trip by transit.

Source: 1996 Transportation Tomorrow Survey data, The Data Management Group, University of Toronto.

In terms of transit pass users in the GTA, individuals with no vehicle and no licence had the highest percentage of transit passes; 34% of all working individuals without a car and without a licence held a transit pass. By comparison, 5% of individuals with a licence and with access to a vehicle were pass holders. It should be noted that these trends may be different in other cities with different fare policies than Toronto.

The TTS data also confirms that there is a high correlation between transit use and monthly pass ownership. In fact, transit mode shares for employees with transit passes for all trips made are 66% compared to 8% for those without a pass. These differences may be in part due to the fact that it is not economical to purchase a Toronto Transit Commission Pass if it is not used every day, although evidence from other areas, including Transit Chek data in the U.S., shows that people increase their transit use with the purchase of a monthly pass.

Based on the 1996 Toronto Transportation Data shown on Exhibit 2.8, it appears that the availability of free parking at the place of work has a significant influence on modal choice. Only 6% of employees who have free parking use transit, compared to 31% of employees who do not. Conversely, providing employees with a transit pass should also have a significant influence on modal choice.

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### Exhibit 2.8: Mode Choice Characteristics of Employees with and without Free Parking

(Greater Toronto Area and Hamilton-Wentworth – 1996 TTS)

	Daily Person Trips	Daily Transit Trips	% transit
Persons with Free Parking	5,187,346	331,498	6%
Persons without Free Parking	1,653,195	512,739	31%
<b>Total</b>	<b>6,840,541</b>	<b>844,237</b>	<b>12%</b>

Source: 1996 Transportation Tomorrow Survey data, The Data Management Group, University of Toronto.

The numbers shown in Exhibit 2.8 are all daily trips by employed persons, not just work trips.

### 2.5 CHOICE AND CAPTIVE COMMUTERS

The impact of policies to encourage transit use depends on whether or not an individual is "captive" to a particular mode. For example, if a person needs a car to drive to work, either because she frequently requires a car to carry out her business, or simply because there is no other mode available, then this individual may not be impacted by a tax incentive for transit use. A person already using transit because he has no other choice may not change his travel behaviour, but will instead simply receive an added tax benefit. All other "choice" commuters, both auto and transit, could be impacted by the transit benefits initiative. Attracting choice auto users to transit and maintaining existing choice transit users is a key objective of the transit benefits initiative. It should be noted that many "captive" transit riders may become "choice" riders over time as their personal circumstances change.

Of particular interest to this study is the proportion of auto and transit trips where the trip maker has the option of using either mode. Existing "choice" transit riders represent an important market because current tax policies and transportation pricing trends (see Section 3) may cause some of these riders to shift to personal vehicle use. Existing "choice" auto users are an important market since the potential emissions reductions of tax incentives are directly related to how many of these auto users are motivated to shift to public transit.

We have been able to find only two data sources for determining the percentage of transit riders who are choice riders. Recent work by the Toronto Transit Commission has been undertaken to identify discretionary or choice riders. In Toronto, about 750,000 auto users take the TTC part-time and 400,000 of these (53%) are insured car owners, indicating that they are choice transit riders. A similar analysis in the Ottawa Region (RMO) found that the split between captive and choice users for both auto and transit modes is quite similar for work and school trips. The split was 48% captive /52% choice for transit and 46% captive /54% choice for auto<sup>7</sup>. Unfortunately, there are no national statistics for Canada on "captive" vs "choice" users of personal vehicles and public transit.

While the ratios of "captive" to "choice" transit ridership appear to be similar for Toronto and the Ottawa region, the region-wide modal share of transit vs auto use is very different. Transit mode share in the urbanized area of the Toronto and Ottawa regions for all trips are 20% and 10% respectively.<sup>8</sup> Ottawa is representative of medium sized Canadian cities in this respect although, as shown previously, it does have a high share of transit users for work trips. In the absence of national statistics, we assume, therefore, that the ratio of "captive" to "choice" transit riders is approximately 50/50 in Canadian cities served by public transit.

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<sup>7</sup> The Regional Municipality of Ottawa-Carleton, *Transportation Master Plan, Defining Modal Share*, June 1996.

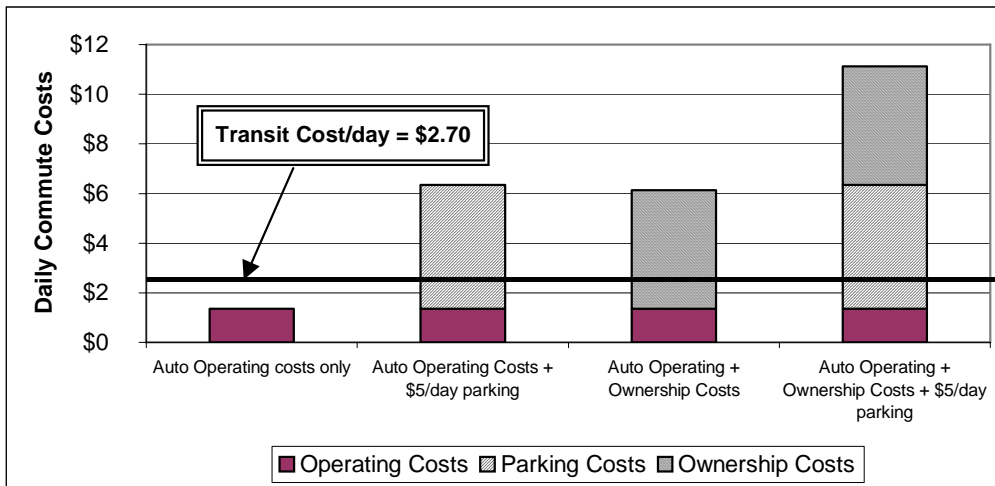
<sup>8</sup> Transportation Association of Canada, *Urban Transportation Indicators, Phase 2 Pilot Project*, April 1996.

**2.6 COMMUTER TRAVEL COSTS**

It is interesting to compare the costs of auto and transit for a typical journey to and from work and to consider the possible mode shift impacts of savings resulting from tax-free transit benefits. Exhibit 2.9 provides a comparison of a number of daily auto cost scenarios with the average daily cost of transit. Data on transit costs was calculated based on data from the Canadian Urban Transit Association while data on average auto costs was obtained from the Canadian Automobile Association. As shown on Exhibit 2.9, if both operating and ownership costs are reflected in the daily auto costs, in all cases auto is more expensive than transit. However, if parking is free, and the cost of car ownership is not taken into account in the daily costs (note: most people do not perceive car ownership costs in daily travel) then transit would be perceived as a more expensive mode. As highlighted in the data above, most people do in fact receive free parking.

Given the above trends, the impacts of tax-free employer provided transit benefits could be significant. In particular, if the average cost of transit becomes cheaper than the perceived cost of auto travel, then people may seriously consider transit as an option, especially if transit can provide competitive travel times.

**Exhibit 2.9: Comparison of Daily Auto and Transit Costs**



Source: Auto Costs – Canadian Automobile Association  
Transit Costs – Canadian Urban Transit Association

### **3. REVERSING THE DECLINE OF PUBLIC TRANSIT IN CANADA - THE POLICY CHALLENGE**

Increasing modal shift from Single Occupancy Vehicles (SOVs) to lower energy intensive modes, including public transit, will be an essential element of a strategy for meeting the Kyoto targets for GHG emissions reduction from urban transportation. Average GHG emissions per passenger kilometre of personal vehicle travel are more than three times greater than average GHG emissions from transit in Canada (254 grammes per pass-km vs. 79 grammes per pass-km<sup>9</sup>). Hence, there is significant opportunity for GHG emissions reduction through mode shifting from personal vehicles to public transit.

#### **3.1 TRENDS IN URBAN TRANSPORTATION IN CANADA**

The history of public policy in urban transportation over the past four decades, and the continued decline in market share of public transit over the past decade, raises serious concerns about the future viability of the Canadian public transit industry. Financially viable transit will be essential to providing an alternative source of mobility if personal vehicle use is to be reduced to meet the Kyoto target.

*After two decades in which auto use increased along with public transit ridership, Canada's ability to balance public and private means of urban mobility appears to have broken down. Since 1990, urban transit has steadily lost riders while urban auto use continues to increase. Consumer price data show that public transit has become more expensive relative to the automobile since 1989. Price divergence can be explained by a coincidence of fiscal austerity in the public sector, where urban transit is supplied and growing efficiency in the private sector which produces autos. Despite a heightened awareness of social, economic, and environmental externalities created by urban auto use, policymakers have done little to address this shift towards the auto.<sup>10</sup>*

In the period from 1950 to 1990, Canada and the U.S. had similar patterns of economic and demographic growth. Before 1990, however, Canada was far more successful in maintaining transit as a viable option to the automobile. From the 1950's and into the 1980's, provincial and municipal governments in Canada invested heavily in transit infrastructure, including, for example, the Toronto subway system, Montreal metro, Vancouver SkyTrain, Ottawa Transitways and the Calgary and Edmonton LRTs. "During the 1970's and 1980's Canada's (prior) investment in transit infrastructure paid handsome dividends with transit ridership levels and an overall share of urban travel that rivalled European cities."<sup>11</sup>

Exhibit 3.1 shows comparable data on annual total and per capita transit trips for Canada and the United States from 1950 to 1997. It is clear that prior to 1990, Canada, partly because it was starting from a stronger base of transit use, managed to achieve a significantly slower rate of decline in transit use than the U.S. Since 1990, however, the rate of decline in transit use in Canada has been greater than that in the US, where public financial support for transit as an alternative to continuing growth in auto dependence is currently stronger than in Canada (Exhibit 3.2).

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<sup>9</sup> *Foundation Paper on Climate Change – Transportation Sector*, prepared by the Transportation Table of the National Climate Change Process, December 1998.

<sup>10</sup> *Transit in Trouble? The Policy Challenge Posed by Canada's Changing Urban Mobility*, Anthony Perl, University of Calgary, and John Pucher, Rutgers University, New Brunswick, NJ, Canadian Public Policy, Analyse de Publiques, XXI:3-261-283, 1995 page 261

<sup>11</sup> *Ibid*, citing Soberman, 1983; Cervero, 1986.

**Exhibit 3.1: Transit Ridership per Capita: Canada and United States (1970 - 1997)**



Source: A. Perl and J. Pucher *Transit in Trouble?* Canadian Public Policy, 1995 with updated data from CUTA, APTA

**Exhibit 3.2 Percent Change in Transit Ridership Canada and United States (1990 - 1997)**



Source: Ibid

**3.2 THE IMPACT OF PRICING ON TRANSIT AND AUTO MODE SHARE**

There is strong evidence linking the decline of transit in Canada during the 1990's to the widening gap between pricing of public transit and the cost of owning and operating an automobile (or light truck). As shown on Exhibit 3.3, from 1986 to 1990 the price of transit fares had risen slowly while the costs of owning and operating an automobile had remained relatively constant. With the signing of the Canada/U.S. Free Trade Agreement in 1989 and the introduction of the GST in Canada in 1991, the cost of purchase of personal vehicles has decreased. Since 1990, the price of transit fares has increased



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dramatically in Canada. This widening gap between the cost of using transit and the automobile has contributed to the decline in transit ridership and mode share.

#### Exhibit 3.3: Transportation Pricing Trends (1986 to 1997)



Source: Perl and Pucher, updated by IBI Group with Consumer Price Index data.

Rising transit fares have been a consequence of fiscal austerity as governments have reduced transit subsidies as they grappled with deficits. The upward pressure on fares had been exacerbated by the increasing cost of transit per passenger trip. Between 1970 and 1992, the average operating cost per passenger trip on Canadian transit rose 89 percent in constant 1992 dollars<sup>12</sup>.

The response of governments has been to cut operating and capital subsidies for transit and to transfer responsibility for funding transit to municipalities. Municipalities are experiencing increasing difficulty in financing existing public transit services and service expansion. There is growing consensus that municipalities can no longer turn to the property tax for increased subsidies for transit. Hence, new revenue/financing mechanisms must be found.

Exhibit 3.4 compares public transportation subsidies and unprofitability in Canada and the U.S. from 1984 to 1996. As shown, there has been a significant reduction in the operating subsidy per passenger-kilometre to Canadian transit agencies since 1992, largely due to a significant drop in provincial funding levels. At the same time, transit agencies were able to improve operating cost recovery levels slightly.

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<sup>12</sup> Ibid, page 271

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**Exhibit 3.4: Comparison of Public Transport Subsidies and Unprofitability in Canada and the United States – 1984 to 1992**

	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996
<b>Operating subsidy per linked passenger trip</b>										
Canada (inflation-adjusted 1996 C\$) <sup>1</sup>	0.81	0.84	0.99	1.03	1.14	1.20	1.17	1.16	1.13	0.90
US (inflation-adjusted 1996 US\$) <sup>2</sup>	1.15	1.29	1.36	1.32	1.38	1.40	1.42	1.49	1.43	1.46
<b>Regular service passenger revenue as % of operating costs</b>										
Canada <sup>3</sup>	50	55	52	44	51	52	52	53	54	56
US <sup>4</sup>	38	39	37	37	36	37	37	38	38	40

Source: Based on Table 2 from Perl and Pucher, re-created with new data by IBI Group.

**NOTES:**

- <sup>1</sup> From applicable CUTA Canadian Transit Fact Book for each year; "Provincial Operating Contribution" plus "Municipal Operating Contribution", divided by "Regular Service Passenger Trips"; values adjusted according to Canadian CPI.
- <sup>2</sup> From APTA 1998 Transit Fact Book; "Total Public Funds" from Table 21 - Operating Funding Sources, divided by "Total Unlinked Passenger Trips" from Table 32 - Passenger Trips by Mode, multiplied by 1.25 for linked trips estimate; values adjusted according to US CPI.
- <sup>3</sup> From applicable CUTA Canadian Transit Fact Book for each year; "Regular Service Passenger Revenues," divided by "Total Direct Operating Expenses."
- <sup>4</sup> From APTA 1998 Transit Fact Book; "Passenger Fares" from Table 21 - Operating Funding Sources, divided by "Total" from Table 29 - Operating Expense by Object Class.

Perl and Pucher conclude that rising per passenger subsidies in Canada up to 1992 were the result of three factors:

- expansion of transit into unprofitable services in low density, auto oriented suburbs, encouraged by the availability of provincial operating and capital subsidies;
- low transit fares inherited from the 1970s; and
- declining productivity of transit operations. Vehicle-kilometres per employee dropped from 20,800 to 19,600 between 1980 and 1992.<sup>13</sup>

In summary, therefore, until the 1990s transit became increasingly unprofitable and dependent on public support in the same period that the auto industry has become increasingly competitive. Since that time, however, it can be seen that passenger revenue have become a higher proportion of operating costs as the availability of subsidies from higher levels of governments has diminished. Similarly, operating subsidy per passenger trip in Canada has gone down in constant dollars. Transit operations have therefore become more effective in terms of operating costs. However, transit ridership, although showing a slight increase, still is accounting for a lower and lower share of total travel.

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<sup>13</sup> Ibid, page 272

### **3.3 A NEW PRICING STRATEGY FOR TRANSIT**

Since governments have been reducing their subsidies towards transit, new policy approaches are required to stem the decline of transit in Canada. Perl and Pucher suggest three major steps, that represent a set of integrated policies for achieving that objective:

- a new transit pricing strategy;
- pricing the automobile more efficiently;
- ending the aberration of auto-dependent land-use.<sup>14</sup>
- A more complete set of initiatives would also include improvements in the speed, coverage and frequency of transit services as well as transportation demand management (TDM) and many other initiatives.<sup>15</sup>

For purposes of this study of tax exempt employer-provided transit benefits, we focus on the importance of a new strategy for transit pricing. It is assumed that the other two steps will be addressed in other studies commissioned by the Transportation Table.

Perl and Pucher conclude that a new transit subsidy strategy of federal and provincial governments must be focussed on making transit more price competitive with the automobile. The tax-exempt employer-provided transit benefit is a policy option that can be directly targeted at price competitiveness and can be integrated into the marketing programs of transit agencies to increase ridership. Experience with recent market based fare revisions in European countries has resulted in overall ridership increases of 15 to 30 percent.<sup>16</sup>

In most major urban centres in Canada, growing congestion and deteriorating air quality over the next twenty years are predicted under Business as Usual scenarios. Specific examples of such forecasts can be found in studies of the Greater Vancouver region, the Greater Toronto Area, and the Regional Municipality of Ottawa-Carleton. For example, a recent report on transportation planning studies for the Greater Toronto Area, forecasts that public transit modal share will drop from 18% in 1996 to 15% in 2021.<sup>17</sup> In the absence of policy changes, continuing decline in modal share for public transit relative to the personal vehicle will work in opposition to Canada's effort to meet its Kyoto commitment for GHG reduction. Canada's ability to revitalize its transit industry will be a key to whether or not the challenge will be met.

Canada is in a unique situation in the industrialised world. It is one of the few countries where the central government does not have a major role in urban transport. Through measures such as the proposed tax exempt employer-provided transit benefit, the Federal Government could provide support for modal shift to public transit, through a mechanism that directly influences transit ridership nationwide. The measure also provides the potential for leverage compared to straight subsidies by inducing contributions from employers and employees if, and only if, ridership is increased.

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<sup>14</sup> Ibid, page 279

<sup>15</sup> Full Cost Transportation and Cost-Based Pricing Strategies, prepared by IBI Group for the Ontario Transportation and Climate Change Collaborative, November 1995.

<sup>16</sup> Ibid page 277

<sup>17</sup> *Toronto Reconsidered, Planning for the Next Century*, John Barber, James Rusk, The Globe and Mail, April 5, 1999, citing data from Ontario Ministry of Transportation and GO Transit

#### **4. STATUS OF TAX INCENTIVES FOR TRANSIT USE IN OTHER COUNTRIES**

##### **4.1 TAX INCENTIVES FOR TRANSIT USERS IN THE UNITED STATES**

The concept of tax benefits for transit users in the U.S. is not a new idea. While informal practices preceded it, the first U.S. tax law on this subject, implemented in 1984, allowed up to \$15 tax-free for transit use with a number of restrictions. As shown in Exhibit 4.1, several modifications have since been made to U.S. tax laws to provide additional benefits for transit users.

##### **Exhibit 4.1: Evolution of Federal Commuter Benefits in the United States**

**1984:** Deficit Reduction Act - \$15 per month tax exemption for transit users, with restrictions

**1991:** IRS administrative action - increased monthly transit cap to \$21

**1993:** National Energy Policy Act - Added Internal Revenue Code, Section 132(f) "Qualified Transportation Fringe"

- Vanpool expenses also qualified
- Transit/Vanpool benefits – to \$60 per month
- Qualified Parking - \$155 per month

**1996:** IRS indexing of benefits

- Transit/Vanpool benefits - \$65 per month
- Qualified Parking - \$165 per month

**1997:** Taxpayer Relief Act – taxable payments in lieu of employer provided parking permitted

**1998:** Transportation Equity Act For the 21<sup>st</sup> Century (TEA-21)

- Employee can elect to buy transit fares with pre-tax compensation
- Tax-free transit benefit increases to \$100/month after 2001

Source: Adapted from: *New Federal Commute Benefits With The TransitChek Program*, a presentation by the TransitCenter.

Up to 1998, only benefits paid for by the employer were tax-free. An employer would have to set up the program and pay its entire cost. This requirement, of course, could be minimized to the extent that an employer might adjust for putting a program in place by reducing conventional taxable compensation increases they might otherwise have made.

The most recent legislation governing Federal commuter benefits is the Transportation Equity Act for the 21<sup>st</sup> century (TEA-21) which was signed into law on June 9, 1998. The major change in TEA-21 from the previous legislation is that it now allows, in addition to tax-free, company-paid benefits, a new option for employees to direct pre-tax salary to transit. This option removes the cost from employers and allows them to offer more flexible programs. The entire area is becoming known as Commuter Choice<sup>18</sup>. The commuter choice provisions of the TEA-21 allow employers to let their employees allocate up to \$65 per month (\$780/yr) of their salary before taxes to pay for transit and vanpool parking. As a result, employees are not charged tax on this proportion of their income. At the same time, employers can exclude qualified transportation benefits from the gross income of employees, thereby saving on payroll taxes. In fact, the employer and the employee can share the cost, both out of tax-free money, of the benefit up to the

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<sup>18</sup> Association for Commuter Transportation, *Money Saving Tools, Explanation of the Federal Tax Advantages for Employer-Provided Transportation Benefits*, from the TDM Tool Kit, 1998.

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monthly maximum. Under TEA-21, the maximum tax-free allowance will rise to \$100 per month after 2001.

The objective of the TEA-21 provisions is to level the playing field for auto and transit users in order to allow employees to make a choice between modes without having to worry about the tax implications of their choice. The benefits apply not only to transit, but also to vanpools and qualified parking (including employer-provided parking at the workplace). Exhibit 4.2 summarizes the Tax Benefits for all qualified modes in the U.S.

As will be discussed later in this report, the situation in the U.S. differs from Canada in that employer provided parking in the U.S. has never been treated as a taxable benefit, whereas in Canada, some forms of employer-provided parking may be taxed.

**Exhibit 4.2: Summary of Tax Benefits In the United States**

Alternative Mode of Transportation	Incentive	Tax Implications
<b>Transit</b> <sup>1</sup>	Up to \$65/month, \$780/year for transit expenses (increases to \$100/month after 2001)	Employers give their employees up to \$65/month to commute via transit; get a tax deduction and save over providing same value in gross income or employers allow employees to use pre-tax income to pay for transit and employers save on payroll tax (at least 7.65% savings) or A combination of both up to statutory limits
<b>Vanpool</b> <sup>1</sup>	Up to \$65/month, \$780/year for vanpool expenses (increases to \$100/month after 2001)	Employers give their employees up to \$65/month to commute via vanpool; get a tax deduction and save over providing same value in gross income or Employers allow employees to use pre-tax income to pay for vanpooling and employers save on payroll tax (at least 7.65% savings) or A combination of both up to statutory limits
<b>Qualified Parking</b> <sup>1</sup>	Up to \$175/month, \$2,100/year, for parking at or near an employer's worksite, or at a facility from which employee commutes via transit, vanpool, or carpool	Employers give their employees up to \$175/month for qualified parking; get a tax deduction and save over providing same value in gross income or Employers allow employees to use pre-tax income to pay for qualified parking and employers save on payroll tax (at least 7.65% savings) or A combination of both up to statutory limits

<sup>1</sup> Vanpool or Transit Benefits can be provided in addition to Qualified Parking for a total benefit of up to \$240/month or \$2,880/year.

SOURCE: Adapted from Association for Commuter Transportation, *Money Saving Tools, Explanation of the Federal Tax Advantages for Employer-Provided Transportation Benefits*, from the TDM Tool Kit, 1998.

### 4.2 EUROPEAN EXPERIENCE

In most other OECD countries, central governments play a much greater role in funding public transit systems. It is known, however, that many transit agencies in Germany, Austria, the Netherlands and Switzerland revised their fare structures in the 1990s to discount monthly and/or annual passes for frequent users, promoting these as "environmental passes" as these changes were justified on the basis of

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## Tax Exempt Status for Employer-Provided Transit Benefits

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the environmental benefits accompanying increased transit use<sup>19</sup>. In the Paris region of France, employers must provide half the cost of a transit pass for travel between the residence and place of work for their employees; this provision dates from the early 1980s. Britain has recently announced that in order to assist in complying with its Kyoto commitments, taxes on employee benefits will exclude subsidies to public bus services that bring in employees and employer-provided bus services.<sup>20</sup>

### 4.3 MARKET PENETRATION RATES

To date, there have been few attempts to implement employer-provided transit benefits programs in Canada, largely because the current tax laws do not provide incentives. As a result, it is necessary to look elsewhere to assess the potential uptake by employers and acceptance by employees.

Employer-provided transit benefits programs have been in place for some time in the U.S. but have gained extensive attention as a result of changes in tax laws implemented through the Intermodal Surface Transportation Equity Act (ISTEA) and more recently the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). As of 1998, there were some 20 cities in the United States that had some form of transit voucher program. The distribution of transit fare vouchers rather than passes or other transit fare media has been implemented in order to relieve the administrative burden placed on the employer and to provide greater flexibility. A voucher program provides flexibility in terms of the type of fare media to be used by the employee and is more practical in metropolitan areas with multiple transit agencies. The majority of transit voucher programs are implemented by clearing houses formed specifically for printing and distributing transit passes, TransitChek in the New York area and Commuter Check in a number of other centres.

**Comment [PC1]:** See back page of Crans New York Business article - Transit Check Brochure

There are two factors to consider when making comparisons to the United States:

- transit mode shares for most U.S. cities other than New York are lower than in the larger Canadian cities; in Canada, there are already a high number of choice commuters using transit. The intent of a transit benefit is to attract more choice users and it may be easier to do so in Canada as transit appears to be a more acceptable alternative in this country;
- the cost of parking for employment is a tax deductible expense in the U.S.; therefore the incentive provided by tax-free transit benefits in Canada would be greater than in the U.S. in the instances where parking benefits are taxed.

The transit-voucher program in the U.S. has been successful. Exhibit 4.3 illustrates the trends in TransitChek enrolment rates and annual revenues for its operations within the New York Metropolitan Area. During the five year period between 1993 and 1998, annual sales of TransitChek vouchers increased by a factor of over 3.3, representing an annual average growth rate of 27%.

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<sup>19</sup> Perl, A., Pucher., *J Transit in Trouble? Canadian Public Policy*, Vol. 21, No.3, 1995

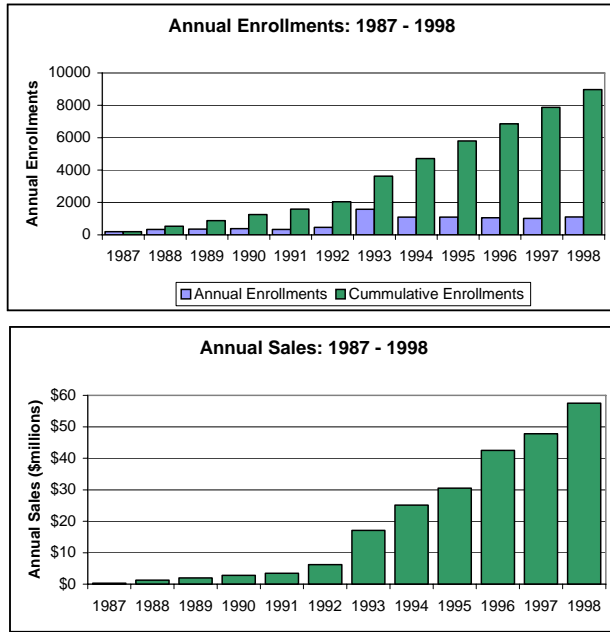
<sup>20</sup> The Times of London, Wednesday, March 10, 1999.

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**Exhibit 4.3: Trends in Performance of TransitChek (New York Metropolitan Area)**



Since August 1998, following the changes introduced through TEA-21 that allowed employees to use part of their pre-tax compensation to purchase transit benefits through their employers and relieving the need for employers to pay the entire cost of transit benefits, sales of transit vouchers by Commuter Check Services Corporation, the operator of Commuter Check, are reported to be increasing at a rate of 10% per month, compared to the previous growth rate of 2% per month.<sup>21</sup>

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<sup>21</sup> Personal communication from Richard Oram, President of Commuter Check Services Corporation, April 5, 1999.

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**5. LITERATURE REVIEW**

In addition to the Perl and Pucher paper reviewed in the previous section of this report, a number of other sources were reviewed. The most important of these are summarized in this section.

**5.1 EMPLOYER-PROVIDED TRANSIT PASSES: A TAX EXEMPT BENEFIT, BENEFIT/COST ANALYSIS**

This is a paper developed by Todd Litman of the Victoria Transport Policy Institute in 1996 on behalf of the Transit Advocacy project of Transport 2000 Canada. This study was also funded by a number of other agencies including Environment Canada, Health Canada, Canadian Urban Transit Association, Chawkers Foundation and the Samuel & Saidye Bronfman Foundation.

This is a fundamental paper in the discussion of possible use of employer-provided transit benefits. It also is a source of much of the comparison of the treatment of parking with the treatment of transit discussed in this study.

Exhibit 5.1 (Tables ES-1 and 5 in the paper), summarizes the actual current situation, the official policy under which parking benefits are taxed and the proposal that transit benefits should be tax exempt as well. The main assumptions used in developing this table are:

- the cost of providing a parking space averages \$1,200 per year;
- tax is not normally collected on employer provided parking benefits;
- the employer would provide the cost of the transit benefit which would be \$55 per month;
- the average marginal personal income tax rate is 38%.

**Exhibit 5.1: Automobile and Transit Incentives Compared**

Policies	Automobile Benefits		Transit Benefits		Net Financial Incentive	
<b>Actual Current Policy</b> (Free, tax exempt parking, no transit benefit)	Parking Benefit	\$1,200	Parking Benefit	\$ 0	Auto Benefit	\$1,772
	GST avoided	84	GST avoided	46	Transit Benefit	- 46
	Tax exemption	488	Tax exemption	0	Auto Advantage	\$1,726
	Total Benefit	\$1,772	Total Benefit	\$ 46		
<b>Official Policy</b> (Free, taxed parking, no transit benefit)	Parking Benefit	\$1,200	Parking Benefit	\$ 0	Auto Benefit	\$1,284
	GST avoided	84	GST avoided	46	Transit Benefit	- 46
	Tax exemption	0	Tax exemption	0	Auto Advantage	\$1,238
	Total Benefit	\$1,284	Total Benefit	\$ 46		
<b>Transit Benefit Proposal</b> (Free, tax exempt parking and transit benefits)	Parking Benefit	\$1,200	Parking Benefit	\$ 660	Auto Benefit	\$1,772
	GST avoided	84	GST avoided	46	Transit Benefit	- 974
	Tax exemption	488	Tax exemption	268	Auto Advantage	\$ 798
	Total Benefit	\$1,772	Total Benefit	\$ 974		

Source: Employer Provided Transit Passes: A Tax Exempt Benefit, Victoria Transport Policy Institute, December 1996

The paper then goes on to make a number of assumptions about current mode shares and the degree to which a tax exempt transit benefit would penetrate the market and convince current auto users to switch to



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public transit. Based upon this, the author estimates the potential travel impacts as shown on Exhibit 5.2 (Table ES-3 in the report).

**Exhibit 5.2: Estimated Travel Impacts (Assumes High Coverage Growth)**

	5 Years	10 Years	20 Years
Urban, peak-period vehicle travel reduction (million km)	141	302	932
Percentage reduction in urban, peak-period vehicle travel	0.6%	1.2%	3.0%
Percentage reduction in peak-period, Central Business District vehicle travel growth	36%	35%	32%

Source: Ibid

Of course, this is based upon a number of assumptions that were made concerning current travel habits and the receptivity of employees to take up the transit benefits.

This paper has been criticized because it depends upon a number of assumptions about urban transportation (distribution of work place, extent of employers who provide parking, cost to employers to provide parking, and so forth). Finding actual data in this area, however, is quite difficult, particularly data that is representative of the situation across Canada. Essentially, to come up with quantitative estimates of the impact of any program, a number of assumptions have to be made. Later in this report, we also make estimates regarding various factors in order to come up with quantitative estimates of the effect of any changes in the tax treatment of employer-provided transit benefits.

Two other, perhaps more fundamental concerns have been expressed with respect to the measures proposed in the paper:

- that the actual estimated impacts of an employer paid transit pass program on CO<sub>2</sub> emissions are quite small in total. In this report we provide our own estimates of the potential impact of different scenarios of tax exempt transit benefits programs;
- that efforts should be concentrated on trying to eliminate all subsidies rather than to provide a countervailing subsidy to public transit because auto parking is in effect subsidized. As we will describe later, however, it is very difficult to do this.

It should also be mentioned that the 1996 study examined only employer-paid transit benefits, in other words the situation in the United States before the additional flexibility provided by TEA-21 was introduced. As noted in the previous section, this additional flexibility has greatly increased the appeal of transit benefits, particularly to employers who may bear none or a smaller proportion of the total cost of these benefits. This study also only examined a monthly transit benefit of \$55, estimated to be the cost of transit pass. As is evidenced by the growth in use of various programs in the U.S., a more flexible program can have large results in terms of appeal, particularly to employers. It is therefore timely to re-examine some of these questions.

Overall, we believe that the subject report is a good effort at making estimates of the potential impact of a employer-provided transit benefit. If anything, many of the assumptions are too conservative given the latest developments in the United States after passage of the TEA-21 Act.

## **5.2 FEDERAL PARTICIPATION IN TRANSIT BENEFITS PROGRAMS**

This is often referred to as the GAO (United States General Accounting Office) report. It actually is a transcript of testimony delivered by Mr. Kenneth M. Meade, Director, Transportation Issues, of the Resources, Community and Economic Division of the GAO. The testimony was delivered to a Congressional Subcommittee on September 23, 1993.

As of April, 1993, 75 U.S. federal agencies and organizations (out of about 150) participated in the transit benefit programs. At that time, however, almost all the agencies offered a \$21 per month benefit, even though the Act provided for a maximum of \$60 per month transit subsidy. The reason given for this is that the government departments had to find the resources out of their internal budgets. The GAO undertook a survey of the use and results of the transit benefit program.

Key points made in the testimony were:

- the federal government agencies provided transit benefits to about 18,500 employees in several cities out of a total of about 59,000 eligible employees; (Note: the program is currently used by 31,000 employees in the Washington area alone.)<sup>22</sup>
- around 33% of the people employed by the participating agencies accepted the transit benefits;
- employee participation rates were highest in New York (88%) and Chicago (80%) and lowest in Kansas City (4%). In Washington, 28% of eligible employees participated;
- about 70% of the employees who received parking from their agencies received it free of charge;
- 21% of the employees who accepted public transportation benefits from their agency were new transit riders. Almost 60% of this group previously drove alone as their primary means of commuting to work. This percentage means that for every new transit rider who was influenced by the availability of transit benefits, there were three who were already using public transit;
- the GAO also asked what would happen if the transit benefits were increased from \$21 per month to the \$60 maximum tax-free benefit permitted by the new law that went into force at the beginning of 1993. Twenty-four percent of the remaining non-participating employees said that they would definitely or probably change. This would increase participation from 33% to 49% and the 16% increase would probably all be new transit riders as almost all transit users took advantage of the initial program. With this increase there would be almost one new transit rider for every existing transit user who took advantage of the program.

When considering these results, it should also be remembered that this survey took place in 1993. This was before TEA-21 changed the legislation so that the employer did not have to provide the whole transit benefit out of his own revenues. The more flexible provisions of TEA-21 whereby the employee can provide all or part of the cost of a transit benefit month from pre-tax earnings has meant that a much higher proportion of employers are participating in the program.

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<sup>22</sup> Press Release by Representative Blumanauer, January 20, 1999

### **5.3 IMPACTS OF THE BAY AREA COMMUTER CHECK PROGRAM: RESULTS OF THE EMPLOYEE SURVEY**

This report summarizes the results of a survey of San Francisco area users of the transit benefits program that was undertaken in 1994. In this area the program is administered by the Commuter Check Services Corporation. Employers are sold coupons or vouchers (Commuter Checks) which they give to their employees to redeem for various types of fare media (tickets, passes, etc.) on any of the transit systems operating in the Bay Area. Key findings of the survey are summarized as follows:

- about a third (31%) of the employees who receive Commuter Checks have increased their use of transit. These employees reported an average increase of 3.24 transit trips per week. New transit trips were reported for both commuting and non-work purposes;
- the increase in transit use as a result of Commuter Check was more pronounced at employment centres outside San Francisco. Employees outside San Francisco reported an increase in transit commute trips of 48% compared to 25% in San Francisco;
- an estimated 17 million vehicle miles were removed from Bay Area roads in 1994 due to Commuter Check, and an estimated 61 million tons of pollutants were avoided;
  - an estimated \$1.6 million of new transit revenues were generated in 1994 due to Commuter Check;
- a large majority (79%) of respondents noted improved opinions of their employer as a result of receiving Commuter Checks, a third (35%) noted reduced stress from not driving to work or driving less often, and a third (33%) said job satisfaction had improved. Improvements in on-time arrival and productivity were also noted;
  - the findings indicate that more aggressive marketing efforts, implemented in cooperation with transit operators (particularly those serving suburban areas) could have substantial transit ridership and revenue impacts.

### **5.4 OTHER REPORTS**

**Status Report on Short-Term Pro-Transit Strategy.** This report prepared by the City of Toronto Transportation Committee covers much of the ground work on the status of efforts to implement employer-provided tax exempt transit passes in Canada, the options that are available, and the results that have been achieved (i.e. in the U.S.).

**Money Saving Tools, Explanation of the Federal tax Advantages for Employer-Provided Transportation Benefits,** from the Association for Commuter Transportation's TDM Tool Kit (U.S.). This report provides an overview of the current laws regarding commute benefits in the U.S. We have drawn on the "U.S. Model" extensively for the purpose of developing options for Canada, given that it has proven to be successful.

**Commuter Choice Initiative,** U.S. Department of Transportation, Federal Transit Administration. This report summarizes the results of a study which looked at ways to level the playing field among effective transportation commute benefits. The report provides a comprehensive analysis of the benefits of commuter choice initiatives as well as criteria for analysing the impacts.

## **6. TAXABLE PARKING BENEFITS IN CANADA**

One of the arguments made for permitting transit benefits to be purchased with before tax dollars is that a large proportion of employee parking is provided “free” by the employer (who does not provide a corresponding benefit to transit users) and that this benefit is usually not taxed, representing a tax subsidy to automobile driving. Proponents argue that to level the playing field, transit should be treated in a similar way. The study team therefore undertook an examination of the way in which employer provided parking is treated by the tax agencies in Canada.

### ***6.1 PROVISIONS OF THE INCOME TAX ACT AND ENFORCEMENT BY REVENUE CANADA***<sup>23</sup>

Canada’s Income Tax Act provides that benefits received by a taxpayer through his or her place of employment is taxable. Employer-provided parking benefits, while not explicitly identified in the Income Tax Act, are included by Revenue Canada within the overall category of employer-provided benefits. Where possible, the value of employer-provided parking is established on the basis of fair market value of parking in the applicable urban area.

In central urban areas, setting market value is straightforward and is based on the price of nearby commercial parking. In suburban and rural areas, establishing market value of parking is more difficult. Where fair market value for parking cannot be established, Revenue Canada attempts to value the taxable benefit by assessing the costs to the employer of operating and maintaining parking facilities owned by the employer.

Revenue Canada does not attempt to collect taxes on employer-provided parking where:

- free public parking is available and separating public from employee parking is not practical (e.g. shopping malls);
- the employer does not provide parking sufficient for all employees, sometimes referred to as “scramble” parking. This policy ensures fairness to those employees who must find alternative parking spaces outside the employer’s facilities;
- the employer’s costs of providing parking are low. Revenue Canada may not pursue compliance for reasons of administrative efficiency, since the costs of administration for both Revenue Canada and the employer would be high in relation to the tax revenue potential.

Revenue Canada does not collect specific statistics on numbers of employees for whom taxable parking benefits are declared by employers. However, the Department considers parking to be among the key auto-related benefits it assesses in its compliance work and negotiations with employers. The Department acknowledges that it has a limited number of tax auditors working with employers, and that some employers may not be aware that parking provided for employees is a taxable benefit.

### ***6.2 ESTIMATING HOW MANY COMMUTERS PAY TAXES ON EMPLOYER-PROVIDED PARKING BENEFITS***

In the absence of data from Revenue Canada on the numbers of auto-commuters who pay taxes on employer-provided parking benefits, various analysts have attempted to develop bottom-up estimates based on limited available data from other sources. From our discussions with several executives in the

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<sup>23</sup> Communication from Revenue Canada, March 30, 1999

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parking industry and proponents of the tax-exemption incentives (employer-provided tax exempt transit benefits) as well as examination of data from such sources as the Toronto Transportation Tomorrow Survey and the RMO Master plan, we make the following observations:

- Data on parking supply in Canada is highly fragmented.
- Commercial parking is mostly available in larger cities and the core of some smaller cities. There is generally no market for commercial paid parking in suburban areas or smaller urban centres. For example, in the suburban cities and towns in the GTA, outside the boundaries of the amalgamated city of Toronto, there is very little commercial paid parking.
- Where commercial parking is available, roughly half of the available spaces are allocated to monthly (commuter) parking. Designation of spaces to specific individuals in commercial parking lots is rare. Data is not readily available on the percentage of commercial monthly parking purchased by employers vs employees.
- Designated parking is most common in the parking structures of large private and public sector office buildings. Of the total auto-commuting population, a small minority receive designated parking. These are usually senior executives and managers. Some employers level the tax playing field for senior staff who do pay taxes on parking by increasing salaries to offset the taxes paid.
- Establishing the taxable value of the parking benefit for the majority of employees who do not receive designated parking spaces is more difficult than for designated spaces.
- More than 80% of auto commuters receive free or subsidized parking at their place of employment. Data for Canadian cities is consistent with U.S. cities.
- Auto-commuters whose work destinations are in the central urban areas where establishing market value of parking is straightforward, or where they must pay for commercial parking, represent about 20 percent of all urban commuters. This number is consistent with the assumption of Litman in his study. As noted earlier in this report, the Toronto survey results indicate that only a small proportion (15%) of Central Area commuters receive “free” employer provided parking.
- Proponents of employer-provided tax exempt transit benefits, including the Canadian Urban Transit Association, estimate that a very small percentage of auto-commuters receiving free or subsidized parking from their employers, actually pay taxes on these benefits.

### **6.3 CONCLUSIONS**

From our assessment of the parking issue, we are unable to provide a credible quantitative estimate of the numbers of employees who pay tax on parking benefits. However, there is reason to assume that the percentage of commuters paying taxes on parking benefits is quite small. This suggests that most or many auto commuters are receiving a subsidy or tax free benefit while any transit benefits are taxed. This creates an inequity.

## **7. OPTIONS AND SCENARIOS FOR ANALYSIS**

There are a number of issues that need consideration in the development of a policy for tax-exemption of employer-provided transit benefits.

### **7.1 WHO PAYS: OPTIONS**

Tax benefits could be provided to the employer, to the employee or to a combination of both. In the first case, the employer would be allowed a corporate tax deduction for providing a transit benefit to the employee which would decrease corporate profits. The company would receive the same benefit if total compensation were increased; however, the employer may prefer to participate because the transit benefit is a lower cost form of employee compensation than an equivalent salary or wage increase which would be taxable in the hands of an employee.

In the second case, an employee would be allowed to purchase transit fares from pre-tax earnings, presumably through his or her employer; in this case, the employee would receive the tax benefit. The employer has no additional cost other than the addition of a check-off option in the administration of the payroll. In the United States, the employer does derive some savings in the forms of reduced payroll taxes such as social security. In Canada, the potential for this is probably smaller although there may be some payroll tax savings (employment insurance, CPP, etc.).

In a third case, the Income Tax Act could be revised to allow the employer and the employee to share the tax savings of employer-provided transit passes. The employer and employee might share the cost of a transit pass, with each eligible for a tax benefit on its share of the cost of the transit pass. This latter approach has recently been allowed by the U.S. Government in its TEA 21 legislation.

The uptake of a tax-exempt employer-provided transit benefit by employers and employees would be affected by the degree to which it is integrated into the marketing programs of the transit operators targeted at increasing new riders. Experience in the United States has shown that ridership impacts of tax-exempt transit are strongly linked to the aggressiveness of the marketing programs used by transit agencies.

The impact of tax-exemption for employer-provided commuter benefits could be affected by the travel modes included in the tax-exemption coverage. While the focus of the tax-exemption measure of proponents in Canada has been limited to public transit, in the U.S., tax-exemption is also allowed for van-pools. As an incentive for auto users to make more use of transit for a portion of their travel, tax-exemption for paid parking at transit stations could also be considered.

### **7.2 ELIGIBLE AMOUNTS**

The tax exemption for employer-provided transit benefits can be any amount, up to the cost of a monthly transit pass or some other cap. As would be expected, the result of the change in allowable tax-exemption in the U.S. in 1993, from U.S. \$21 to \$60 per month, led to increases in transit rider uptake. When the maximum benefit rises to \$100 after 2001, another jump in usage can be expected.

### **7.3 IMPLEMENTATION MECHANISM**

There are several methods available for implementation of the tax-exempt transit benefit in Canada. These options are discussed more fully in Section 12. Generic alternatives include:

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- monthly passes or other fare media purchased by employers, issued to employees and claimed by the employer as a tax deductible expense;
- subsidized pass sales purchased by the employee through payroll deductions. This option is being studied by the Canadian transit industry;
- vouchers in various denominations can be sold by transit agencies or by separate companies (TransitChek and Commuter Check in the U.S.). The voucher system provides employers more flexibility in the level of transit subsidy provided to employees.

In the United States, the benefits, whether purchased by the employer, the employee or a combination of the two, are usually provided in the form of vouchers purchased by the employer and issued to the employees. This reduces the need for the employer to handle fare media such as transit passes and tickets. A voucher system can also relieve the complexity for the employer where there are multiple transit systems. For example, there are 16 different transit systems in the Greater Toronto Area and many commuters have to use a combination of two of these.

### 7.4 SCENARIOS

For purposes of analysis, we have combined the above options into four separate scenarios, summarized in Exhibit 7.1.

**Exhibit 7.1: Scenarios for Analysis**

Scenario	Description
<b>Basic Scenario</b>	<ul style="list-style-type: none"> <li>• Tax exemption for employer-provided transit pass, with and without a cap</li> <li>• No special marketing</li> </ul>
<b>Marketing Based Scenario</b>	<ul style="list-style-type: none"> <li>• Adds proactive marketing programs by transit agencies to the tax-exempt employer-provided transit benefit</li> </ul>
<b>Flexible Benefit Scenario</b>	<ul style="list-style-type: none"> <li>• Adds the option of pre-tax purchase of transit fares, passes or vouchers by employee, or combination of employer and employee benefits to provide greater flexibility, incentive to participate, and equity</li> </ul>
<b>Extended Mode Scenario</b>	<ul style="list-style-type: none"> <li>• Extends tax benefit coverage to van- pools</li> <li>• Adds tax exemption for paid monthly parking at facilities operated by transit agencies</li> </ul>

Under the **Basic Scenario**, the employer can give tax exempt transit benefits to employees, either in lieu of employer-provided parking or as a general benefit. The employer, of course, is allowed to deduct from corporate earnings the cost of subsidizing transit fares to employees who wish to accept the benefit; the value of these benefits would not be taxable in the hands of the employee. In this scenario, it is assumed that no special marketing efforts are made by transit agencies to encourage non-transit users to shift to transit, or to encourage “choice” transit riders to increase the percentage of their total travel by transit. This scenario would be analogous to the situation that prevailed when the U.S. GAO performed its

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analysis of uptake of the tax-exempt employer provided transit benefits among federal employees prior to 1993. We have assumed an average benefit level of \$55. It should be noted that higher prices are in effect in some jurisdictions. For example, a monthly pass on the Toronto Transit Commission costs \$84 in 1998 (\$76/month if it was bought for an entire year). Monthly passes on commuter rail systems are higher still.

The **Marketing Based Scenario** includes the tax-exempt employer-provided transit benefit as an additional tool in proactive marketing programs of transit operating agencies. Such programs would include active sales campaigns targeted at employers within the agency's area of service coverage, as well as joint marketing efforts with transit providers in adjacent or overlapping jurisdictions. In the limit, combined marketing programs could include Transportation Management Associations (TMAs), now becoming common in the U.S. and being introduced in Canadian cities. TMAs are public/private consortia of transit agencies and employers whose purpose is to help the latter to develop employee transportation programs that encourage increased use of public transit. Other elements of marketing programs would include various fare discount programs, promotional programs, market segmentation research and service modifications designed to increase ridership.

Under the **Flexible Benefit Scenario**, the option of purchase of monthly transit fares or passes through employers from the employee's pre-tax income is added to the Marketing Based Scenario. In the Flexible Benefit Scenario, employers and employees are able to select the share of employer and employee tax benefits that best meets their mutual needs. The maximum combined tax-free benefit might be the price of the monthly transit pass in the applicable city. For the purposes of analyzing the potential impacts of such a scenario, we have assumed that the cost of transit benefits is shared 50/50 between employers and employees. This represents an average impact; the situation in any individual workplace could be different.

An **Extended Mode Scenario** extends the tax benefit coverage of the program to include van-pools and tax exemption for paid monthly parking at facilities operated by transit agencies.



## **8. ENVIRONMENTAL IMPACTS OF EMPLOYER PROVIDED TRANSIT PASSES**

### **8.1 APPROACH TO ESTIMATING IMPACTS**

A concern with previous studies of tax-exempt transit benefits is that they have looked at the Canadian travel market in fairly broad terms without regard for differences between geographic areas and between various user categories. At the same time, previous studies have been heavily reliant on data from the U.S. This is not a criticism of previous studies by any means, as there is a general lack of good travel data for all but a few urban areas in Canada. To the extent possible, this study has attempted to recognize the differences in geographic areas and user characteristics.

In this study, all attempts have been made to obtain the most up to date data on travel impacts of transit benefit impacts. It should be recognized, however, that due to the many different factors that would dictate the impacts of the measures (e.g. marketing, fare payment method, impacts of other measures to reduce auto use, etc.) the estimates presented here are subject to a high degree of uncertainty. The scenarios identified above have been designed to show a wide range of possible impacts.

There are several factors that influence the ultimate impact of an employer provided transit benefits program:

- **Existing Travel Markets:** The impacts of the options may vary according to the size of the urban area, the amount of travel which is destined to downtown areas, and the type and quality of transit service provided. Factors such as these influence individuals in choosing the modes that they do, and in turn why they would or would not choose to accept and use an employer provided transit pass. An understanding of the various travel markets is critical in assessing the travel impacts of each scenario.
- **Market Penetration:** Market penetration relates to the proportion of employers taking part in a program and is highly dependent on the scenario being considered. Market penetration would be considerably higher if employees were given the option of a pre-tax purchase of transit benefits, since employers would have more incentive to participate as it could cost them less or even nothing. Recent experience in the United States has provided valuable insight into the response of employers and employees to different options.
- **Modal Shift Impacts:** The modal shift impacts ultimately depend on how many people, given the choice, would accept transit benefits, and how much additional travel these people would make using transit. In previous studies, different methods have been used to estimate mode shift impacts. Litman (1996) chose to distinguish between recipients and modal shift. In that analysis, it was assumed that recipients would be 1.5 times the existing number of full time transit riders; all existing full time transit users would accept the benefits as well as a large portion of the casual transit users. Therefore there would be one new transit user for each two existing transit users accepting the benefit. It was then assumed that each of these individuals would increase their transit use by an average of 23%. As discussed below, a somewhat different approach was adopted for this study. We make an estimate of the number of recipients who would accept the benefits (based on their existing modal and travel characteristics); current auto users would change their primary mode of commuting to transit. In addition, some choice transit users may have a greater tendency to stay on public transit but this effect has not been estimated. When compared on a similar basis (e.g. impacts depend on the type of scenario and discount provided), the approach adopted for this study is more conservative than Litman's (1996), producing lower modal shift impacts.

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The general approach used in this study is to estimate travel impacts as follows:

- estimate the number of commuters in cities with transit by mode and by whether they are choice or captive users;
- estimate the coverage (percent of employees offered benefits) of the program for each horizon year;
- estimate the percentage of users of the two modes (transit and auto) who would accept transit passes.

The auto travel reduction impacts are calculated as follows:

**Auto trip reduction = number of auto commuter trips x coverage x mode shift**

### 8.2 DEFINING THE TRAVEL MARKET

Obtaining travel data on the different types of travel in Canada is fundamental to this study as each category of travel would have a different response to changes in transit benefits. Exhibit 8.1 provides a breakdown of the basic travel markets. As shown on the exhibit, data has been broken down into four categories of urban areas based on population. The four categories are the same as those used by the Canadian Urban Transit Association for reporting transit operating statistics. In total, these areas account for approximately 62% of the total Canadian population. The areas not covered in these groups (38% of the population) do not have transit service and would therefore not be affected by the policies pertaining to employer provided transit passes, at least not in the short term<sup>24</sup> except for those persons who might use "park and ride" facilities (not estimated in this report). Travel in each of the four types of urban areas shown on Exhibit 8.1 is further broken down into employees travelling to jobs in the Central Area and employees travelling to jobs in other areas. Based on data collected for the Urban Transportation Indicators Study<sup>25</sup>, it was estimated that, on average, Central Areas account for about 20% of the total jobs in an urban area. The rationale for developing estimates by Central Area vs. non-Central Area is to reflect the major differences in transit service levels and availability between these two areas. It is interesting to note that Litman (1996) uses the definition of Central Business District (CBD) which is typically smaller than Central Area, but it is believed that for the purposes of this analysis, both refer to the Central Area or "downtown".

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<sup>24</sup> It is conceivable to envisage that areas without transit could, in the longer term (e.g. beyond 2010) establish transit services in order to allow employees to take advantage of transit benefits, or more likely, to simply provide environmentally friendly alternatives to the automobile.

<sup>25</sup> *Urban Transportation Indicators*, Phase 2 Pilot Project Report, prepared by IBI Group for the Transportation Association of Canada, April 1996.

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**Exhibit 8.1: Breakdown of Commuters By Geographic Area (1996)**

	Population (millions)	Employment <sup>(1)</sup> (millions)	Est. Existing Modal Shares <sup>(2)</sup>			Choice Users <sup>(4)</sup>		Auto Users		Transit Users	
			Auto	Transit	Walk/Cycle/Oth .	Auto	Transit	Choice	Captive	Choice	Captive
								(millions)	(millions)	(millions)	(millions)
<b>Group 1 (Pop &gt;400,000)</b>	<b>10.68</b>	<b>4.81</b>						<b>1.65</b>	<b>1.42</b>	<b>0.55</b>	<b>0.46</b>
Central Area <sup>(3)</sup>		0.96	40%	45%	15%	80%	60%	0.31	0.08	0.26	0.17
Non-Central Area		3.84	70%	15%	15%	50%	50%	1.35	1.35	0.29	0.29
<b>Group 2 (Pop 150,001-400,000)</b>	<b>3.21</b>	<b>1.44</b>						<b>0.44</b>	<b>0.75</b>	<b>0.06</b>	<b>0.06</b>
Central Area <sup>(3)</sup>		0.29	70%	20%	10%	70%	60%	0.14	0.06	0.03	0.02
Non-Central Area		1.16	85%	5%	10%	30%	40%	0.29	0.69	0.02	0.03
<b>Group 3 (Pop 50,000-150,000)</b>	<b>2.77</b>	<b>1.24</b>						<b>0.28</b>	<b>0.82</b>	<b>0.03</b>	<b>0.04</b>
Central Area <sup>(3)</sup>		0.25	80%	10%	10%	50%	60%	0.10	0.10	0.01	0.01
Non-Central Area		1.00	90%	5%	5%	20%	40%	0.18	0.72	0.02	0.03
<b>Group 4 (Pop under 50,000)</b>	<b>0.66</b>	<b>0.30</b>						<b>0.07</b>	<b>0.20</b>	<b>0.01</b>	<b>0.01</b>
Central Area <sup>(3)</sup>		0.06	85%	5%	10%	50%	60%	0.03	0.03	0.00	0.00
Non-Central Area		0.24	90%	5%	5%	20%	40%	0.04	0.17	0.00	0.01
<b>Totals for Cities with Transit</b>	<b>17.31</b>	<b>7.79</b>	<b>72%</b>	<b>16%</b>	<b>12%</b>	<b>43%</b>	<b>53%</b>	<b>2.44</b>	<b>3.18</b>	<b>0.65</b>	<b>0.57</b>
					<b>87.7%</b>						

Notes:

- <sup>(1)</sup> Estimated to be 45% of population; based on Census Data (average = 43%) and TAC Urban Indicators Data (average is 48%).
- <sup>(2)</sup> Based on data from TAC Urban Indicators Study and Census Data (Groups 2 - 4 were estimated) - Auto includes auto passengers
- <sup>(3)</sup> Based on data from TAC Urban Indicators Study and Census Data (average is 20%)
- <sup>(4)</sup> Auto choice users are those who could make any part of their journey by transit; transit choice users are those who have access to other modes .  
These are estimates based on information as described in Section 2.

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Whether a person is an existing transit or auto user will ultimately impact the GHG reduction potential of the proposed policies. Further, whether the person is a choice or captive user of a particular mode will influence the propensity of the person to accept an employer-provided transit benefit. Data on existing transit modal shares by geographic area was developed from the Urban Transportation Indicators Survey. This survey covered eight urban areas, six of which fell into the Group 1 category and two of which fell into the Group 2 category. As a result, mode split data had to be estimated for Groups 3 and 4 and to some extent for Group 2. Essentially, the modal shares for each group were adjusted or estimated so that the total estimated employees who take transit to work ( $7.79 * 16\% = 1.24$  million) was similar to the figure reported by Statistics Canada (1.23 million employees - see Exhibit 2.3 shown previously).

The figures with the greatest degree of uncertainty in Exhibit 8.1 are the choice and captive auto and transit users. As discussed previously, a captive auto user is one who has no other choice but to use the auto mode. This could be due to a number of factors including the fact that there is simply no transit service available, or the person requires their car for business purposes. Essentially, almost every worker travelling to the Central areas of Canadian cities, with the exception of those who require a car for business, could make some portion of their trip via a transit mode. It was assumed that 80% of all auto travellers to Central Areas of Group 1 Urban areas are "choice" auto users. Slightly lower values were assumed for the non-Central areas and smaller urban areas reflecting the lower transit service provided to these areas. Overall, this resulted in a 40%/60% split for choice and captive auto users, which is consistent with the figures quoted previously in Section 2.4. For transit, it was estimated that 60% of employees working in the Central Area were choice riders compared to 40% working in other areas, resulting in an approximately 50%/50% choice/captive transit split. This split is also consistent with those developed in Section 2.5 based on observed data.

In summary, it is estimated that there are some 2.44 million employees in Canada who currently drive to work but would have the option of using transit if it was cost-and time-effective. This represents approximately 31% of the total employees in areas served by transit. A further 1.2 million employees are currently using transit to travel to work, about half of whom have the option of using the auto for their journey but choose not to. These transit riders represent approximately 16% of the commuter market in cities with transit and approximately 10% of the total commuters in Canada.

### 8.3 MARKET PENETRATION RATES

The market penetration rate or "coverage" has the largest impact on how much greenhouse gas emissions can be eliminated by an employer-provided tax exempt transit benefits program. If only a few employers offer benefits, then the impacts will be negligible. On the other hand, if the program becomes so successful that employers are essentially driven by the market to provide some form of benefits, or if employees are given the opportunity to pay for transit passes from pre-tax income, then the program could achieve very high levels of coverage.

Recent information from the United States provides insight into the possible uptake of a transit benefits program:

- During the five year period between 1993 and 1998, annual sales of TransitChek vouchers in the New York Metropolitan area increased by a factor of over 3.3, representing an annual average growth rate of 27%<sup>26</sup>. Indications are that many of the region's largest employers (e.g. Chase Manhattan Bank and Citibank) have not signed on yet but are expected to as a result of recent changes to allow flexible benefits.

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<sup>26</sup> Cran's New York Business, *New Federal Law Gives Fare Deal to Employees Using TransitChek*, June 29, 1998.

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- Recent experience in the San Francisco Bay Area indicates that the growth rate in Commuter Check sales has increased by 20-30% per year over the past two years. Growth rates have increased more than this since the June 1998 tax law changes. In the Bay Area, it is felt that expanded marketing of the program would result in even higher growth rates<sup>27</sup>. The City of San Francisco (30,000 employees) will participate in the program starting in May 1999, with an expected impact of 10,000 additional transit riders.<sup>28</sup>
- Sales of Commuter Checks across the entire U.S. have been increasing at rate of 20% per year and have recently jumped to 10% per month since the June 1998 tax law change.

Despite the high growth rates, it is important to recognize that to date, the total coverage of the program in the United States is still relatively small. For example, in the New York Metropolitan Area, there are currently 150,000 employees in the transit benefits program. We have estimated this to be roughly 2% of the total New York Metropolitan Area employment. Similarly, in the Bay Area, there are about 1,800 employers participating in the program which is also a small portion of the total market. All indications are, however, that the transit benefits program will continue to experience very high growth rates in the coming years with the increase in benefits and the greater flexibility introduced by TEA-21.

Estimating the maximum or ultimate coverage that could be reached by such a program is a difficult task since in the United States, coverage is still growing at a substantial rate. Litman (1996) assumes a maximum coverage of 80% under a high growth scenario; however, there is no justification given for this figure. It is interesting to note, however, that it does correspond to the approximate percentage of employers in the United States that offer transportation benefits (parking, transit or other benefits)<sup>29</sup>. The maximum coverage reached will ultimately depend on the scenario being considered, and whether the employees have the option directing employers to deduct the price of the transit benefit from pre-tax earnings. The GAO report indicates that approximately 50% of the federal agencies surveyed participated in the transit benefits program. This participation rate was realized when the maximum transit benefit was \$21 whereas it is now \$65.

Exhibit 8.2 summarizes the estimated growth rates in coverage of the program for each scenario as well as the estimated maximum penetration rate. Exhibit 8.3 shows the impacts of these assumptions for key horizon years.

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<sup>27</sup> Based on conversation with Robert Huang, MTC Commuter Check Project Manager.

<sup>28</sup> Personal communication, Richard Oram, April 10, 1999.

<sup>29</sup> Association for Commuter Transportation, *Commuter Choice Initiative*, prepared for the Office of Policy Development, U.S. Department of Transportation, Federal Transit Administration June 1996, pg. iii

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**Exhibit 8.2: Estimated Coverage Growth Rates and Maximum Coverage**

	Total Employees	Growth Rate in % of Employees Offered Benefit				Ultimate % of Employees Offered Benefit			
		Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario	Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario
<b>Group 1 (Pop &gt;400,000)</b>									
Central Area	0.96	5%	8%	15%	20%	40%	50%	60%	60%
Non-Central Area <sup>(1)</sup>	3.84	5%	8%	15%	20%	30%	40%	60%	60%
<b>Group 2 (Pop 150,001-400,000)</b>									
Central Area	0.29	3%	5%	10%	15%	40%	50%	60%	60%
Non-Central Area <sup>(1)</sup>	1.16	3%	5%	10%	15%	30%	40%	60%	60%
<b>Group 3 (Pop 50,000-150,000)</b>									
Central Area	0.25	2%	3%	7%	10%	30%	40%	60%	60%
Non-Central Area <sup>(1)</sup>	1.00	2%	3%	7%	10%	30%	40%	60%	60%
<b>Group 4 (Pop under 50,000)</b>									
Central Area	0.06	2%	3.0%	7%	10%	30%	40%	60%	60%
Non-Central Area <sup>(1)</sup>	0.24	2%	3.0%	7%	10%	30%	40%	60%	60%
<b>Total Employees</b>	<b>7.79</b>								

Note: The figures in the above exhibit have been estimated largely using judgement and comparisons to the experience in the U.S.

**Exhibit 8.3: Estimated Program Coverage - Selected Years**

Horizon Year	Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario
2000	4%	6%	12%	17%
2005	25%	36%	58%	60%
2010	30%	41%	60%	60%
2020	32%	42%	60%	60%

Note: The above figures represent the percentage of employees who would be offered benefits. The percentages are based on the annual growth rates and maximum coverage rates shown previously on Exhibit 8.2.

**8.4 EMPLOYEE PARTICIPATION AND MODAL SHIFT IMPACTS**

Estimating the modal shift impacts of transit benefit programs also requires judgement. All of the figures on uptake and modal shifts are based on some judgement, in the context of recent United States experience. Through the development of alternative scenarios, we believe that we have represented the range of possible impacts.

Several studies offer insight into the possible impacts:

- GAO Report:** As discussed previously, the source quoted most often is the report by the United States General Accounting Office (GAO) on the U.S. government participation in transit benefit programs. Based on a survey conducted in 1993, it was found that 21% of the federal employees who accepted transit benefits changed their primary commuting mode to transit as a result of the program. Sixty percent of these were former single occupant car commuters and 35% of the remainder were either members of a carpool/vanpool (16%) or shared a ride with one other person (19%). The GAO also asked what would happen if the transit benefits were increased from \$21 per month to the \$60 maximum tax-free benefit permitted by the new law that went into force at the beginning of 1993. Twenty-four percent of the remaining non-participating employees said that they would definitely or probably change. This would increase participation from 33% to 49% and the 16% increase would all be new transit riders.

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- **Litman (1996):** This report assumes that the number of recipients would be 1.5 times the existing transit ridership and that recipients would increase transit use by 23% on average. The net result of these assumptions (as we interpret them) is a transit modal shift of 30% among all individuals offered benefits.
- **Commuter Check Data:** A survey of 239 San Francisco Bay Area employers that purchased Commuter Checks concluded that about 31% of employees who received Commuter Checks increased their use of transit. It is interesting to note, however, that transit mode shifts were greater in areas outside of San Francisco (e.g. the outer regions) than areas within San Francisco, probably due to the fact that current transit mode splits in these areas are very low.

Based on the above references, there appears to be some consistency in these examples that about 30% of employees accepting transit benefits would be new transit users. In other words, for every three people who accept a transit benefit, one of them would be a new transit user. Of course, these are the results of different circumstances; in particular the U.S. studies are based on the then prevailing low levels of transit benefits. This is therefore considered to be a conservatively low estimate and would depend on marketing efforts on the part of transit agencies. All indications are that the transit agencies in Canada would back a transit benefits program with great enthusiasm.

Recognizing that there are limitations connected with the above results, together with the fact that this study looks at several very different scenarios, independent estimates of the potential mode shift impacts were carried out. The approach used in this study was to look at the various markets and estimate how many people in each segment would accept the benefits. This was carried out for both auto and transit modes, distinguishing between choice and captive commuters and by type of geographic area. Exhibit 8.4 provides a summary of the estimated percentage of commuters accepting benefits by scenario. It is important to highlight that these percentages are estimated on the assumption that the benefits would be useable by the recipient only (as opposed to friends or family members) and that the auto users accepting the benefits would change their primary mode of commuting to public transit. This analysis of modal shifts is somewhat simplified given that it does not take into account the fact some existing transit commuters are part time users only and may increase their transit use as a result of having a pre-paid pass. This assumption would not, however, have a significant impact as the modal shares used in this study refer to a commuter's "primary" mode of travel to work. Another simplifying assumption in the analysis is that most of the people switching to transit would come from the auto mode, either as an auto driver or an auto passenger. Data suggests that auto drivers and auto passengers are equally impacted by an employer-provided transit benefit program (e.g. the ratio of auto drivers to auto passengers among those who transferred to transit is approximately the same as the ratios for all auto commuter trips). The data from the U.S. also suggests that a very small portion of individuals would transfer from walk and cycle modes<sup>30</sup>. Presumably, people walk or cycle because they can or because they gain benefit from it and therefore may not switch modes because of reduced transit costs.

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<sup>30</sup> The GAO report indicated that 95% of all people shifting to transit modes were from other motorized modes.

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**Exhibit 8.4: Estimated Portion of Employees Accepting and Using Benefits**

	Auto Users		Transit Users	
	Choice	Captive	Choice	Captive
<b>Basic Scenario</b>				
Central Area	30%	0%	80%	100%
Non Central Area	15%	0%	60%	100%
<b>Marketing Scenario</b>				
Central Area	30%	0%	80%	100%
Non Central Area	15%	0%	60%	100%
<b>Flexible Benefits Scenario</b>				
Central Area	25%	0%	70%	100%
Non Central Area	15%	0%	55%	100%
<b>Extended Mode Scenario</b>				
Central Area	30%	5%	70%	100%
Non Central Area	20%	5%	55%	100%

Note: The figures in the above exhibit have been estimated largely using judgement and comparison to experience in the U.S. It was felt that separating out choice and captive markets would allow a better understanding of the potential impacts.

As shown by the figures in Exhibit 8.4, it was assumed that all captive transit users (typically individuals who use transit on a regular basis) would accept and use the transit benefits. Depending on the level of subsidy provided by the employer, or in the case of the flexible benefits the level of taxable income of the employee, a large but smaller proportion of choice transit users would also accept the benefits. Maintaining these choice riders would be a key focus of the program.

For commuters whose primary mode is the auto, it was assumed that a much smaller portion of employees would choose to accept the benefits (assuming they are not transferable). For obvious reasons, captive auto users would not accept the benefits and there would be no mode shift for this sector of the travel market. One exception is under the extended mode scenario wherein we have assumed a small percentage would take transit or vanpool for at least some portion of their trip.

In terms of geographic differences, it was assumed that areas with a higher existing propensity towards transit would also have a higher acceptance rate of transit benefits.

The net impact of the assumptions regarding modal split for each scenario are shown in Exhibit 8.5. For the Basic and Marketing scenarios, the modal shift impacts are assumed to be similar, as marketing impacts would primarily impact the uptake or coverage by employers. For the basic and marketing scenario, it is estimated that transit ridership would increase by 37% among all commuters offered the benefits, about 1 new rider for every 2.7 existing riders. Since not all existing transit riders would accept the benefits, the ratio of new transit users to existing transit users would be higher, about 1 new rider for every 2.3 existing riders who accept the benefits. This is a slightly better ratio than the GAO report (1 new rider for every 3 existing) but the GAO report was based on a maximum benefit of \$21 per month only. It can be expected that the modal shift impacts of similar programs would be higher in Canada than in the United States since auto commuters in the U.S. also receive tax-benefits whereas in Canada auto



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commuters are technically required to report parking benefits (although our review suggests that only a small percentage of individuals actually do). Under the flexible benefits scenario, the acceptance rate would depend on what proportion of the benefits are paid for by the employer and what proportion are determined on the basis of reductions in pre-tax income. The general assumption is that the flexible benefits scenario would have a lower participation rate, but a much higher coverage rate. Estimating the mode shift impacts for the extended mode scenario is somewhat more complicated than the other scenarios. A higher number of auto users would be expected to switch to transit (for at least some portion of their journey) under the extended mode scenario. Based on the assumptions outlined in this report, the extended mode scenario would result in 1 new transit rider for every 1.4 existing transit riders who accept benefits.

**Exhibit 8.5: Summary of Modal Shifts Among Recipients**

SCENARIO	% reduction in auto trips	% increase in transit ridership	Ratio New/Existing Transit Riders	Ratio New/Existing Transit Riders Accepting Benefits
Basic Scenario	8.04%	37.2%	1: 2.7	1: 2.3
Marketing Scenario	8.04%	37.2%	1: 2.7	1: 2.3
Flexible Benefits Scenario	7.52%	34.8%	1: 2.9	1: 2.3
Extended Mode Scenario	12.52%	58.0%	1: 1.7	1: 1.4

### 8.5 TRANSIT RIDERSHIP AND GREENHOUSE GAS EMISSIONS IMPACTS

Detailed estimates of the ridership and emissions impacts of the various scenarios are presented in Appendix A. A discussion of the key assumptions and results is presented below.

#### 8.5.1 Baseline Travel Activity Estimates

The travel activity in this study refers to commuter travel within cities with transit service. This represents only a portion of the total commuter travel in Canada, and a smaller portion of the total travel activity in Canada. The basic unit for building up travel activity estimates is the number of employees in cities with transit service. Using employees as the base, total annual commute trip passenger-km was estimated by multiplying the number of employees by 460 (the average number of commuting days per year x 2) and 9.0 km, the average commute trip length as determined through recent Statistics Canada Data (1996). The breakdown of activity in terms of auto and transit trips was based on modal shares outlined previously in Exhibit 8.1.

For the purpose of this study, it was assumed that modal shares for commuter trips under the baseline (do nothing) scenario would remain constant over the horizon period. This is contrary to recent trends in most Canadian urban areas which would suggest a continuing decline in transit modal shares, but still a reasonable assumption given the uncertainty regarding future trends, combined with the fact that data on modal shares in Canada is fairly limited.

In order to estimate travel activity for horizon years, the baseline 1996 employment estimates were assumed to increase by an average of 0.95% per year (compounding), which is the average long term growth rate used in NRCan's Energy Outlook<sup>31</sup>.

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<sup>31</sup> Natural Resources Canada, *Canada's Energy Outlook: 1996-2020*, Energy Forecasting Division, April 1997.

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In the tables presented in Appendix B, changes in transit activity and auto activity are estimated by multiplying the baseline travel activity estimates by the percentage increase in transit use and percentage decrease in auto use respectively (see Exhibit 8.5) and by the estimated coverage.

By 2010, it is estimated that there will be 8.95 million commuters in cities with transit contributing to 37.5 billion passenger-km of travel, of which 32.5 billion passenger-km will be made using auto and transit modes.

### 8.5.2 GHG Emissions Factors

For the purpose of this study, we have estimated greenhouse gas emissions on the basis of passenger-kilometres. Factors reflecting the emissions per passenger-km were obtained from the Transportation Table's Foundation Paper on Climate Change<sup>32</sup>. For 1995, these factors were 254 grammes per passenger-km for urban cars and light trucks and 79 grammes per passenger-km for urban transit. It should be recognized that these factors could vary by region depending on average load factors. The load factors are based on the weighted average for all Canadian transit properties.

For future horizon years, we have assumed that the emission factors for automobiles would improve by 0.69% per year reflecting improvements in fuel economy. Emissions factors for urban transit are expected to increase by 0.43% per year<sup>33</sup>. These improvements in emissions factors assume a business-as-usual scenario. If, as expected, the transit benefits program results in higher load factors, then the emissions per kilometre would improve. Similarly, if significant improvements in technology occur (over and above the baseline scenario) this will also have an impact on the emissions factors.

### 8.5.3 Summary of GHG Emissions Impacts

Exhibit 8.6 below summarizes the transit ridership and greenhouse gas emissions impacts of the four scenarios in the year 2010. Detailed estimates by year are provided in Appendix B. As shown, it is estimated that a transit benefits program could reduce GHG emissions by between 0.067 MT and 0.264 MT. These reductions represent a change of between 1.5% and 4.8% from the baseline emissions from all commuter travel in Canadian cities with transit. As these cities represent a portion of the total employment in Canada (approximately 61%) the reductions as a percent of all Canadian cities would be lower.

It would be speculative to attempt to estimate the impact of the transit benefits program on emissions from non-work related travel. If employees were to receive benefits in the form of a monthly pass (or some other benefit that is not limited to work travel), then they could be expected to use transit more for non-work travel. This study does not attempt to quantify the possible reductions due to modal shifts for non-work travel.

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<sup>32</sup> Transportation Table, National Climate Change Process, *Foundation Paper on Climate Change*, Transportation Sector, December, 1998. Table B-1.

<sup>33</sup> *ibid*, Table 2.4 (Note: bus fuel efficiency factors are assumed to improve at the same rate as new diesel truck fuel efficiency).

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**Exhibit 8.6: Summary of Transit Ridership and Greenhouse Gas Emissions Impacts (2010)**

	<b>Baseline 2010</b>	<b>Basic Scenario</b>	<b>Marketing Scenario</b>	<b>Flexible Benefits Scenario</b>	<b>Extended Mode Scenario</b>
<b>Passenger-km (millions)</b>					
Auto	26,735	26,081	25,848	25,528	24,726
Transit	5,778	6,431	6,665	6,985	7,787
Total	32,513	32,513	32,513	32,513	32,513
<b>Change Passenger-km (millions)<sup>(1)</sup></b>					
Auto	-	-654	-887	-1,207	-2,009
Transit	-	654	887	1,207	2,009
<b>Mode Shifts<sup>(2)</sup></b>					
Auto	-	-2.4%	-3.3%	-4.5%	-7.5%
Transit	-	11.3%	15.4%	20.9%	34.8%
<b>GHG Emissions (CO<sub>2</sub> Equiv.) (MT)</b>					
Auto	6.16	6.01	5.96	5.89	5.70
Transit	0.43	0.48	0.50	0.52	0.58
Total	6.59	6.49	6.45	6.40	6.28
<b>Change in GHG Emissions (MT)</b>	-	-0.102	-0.139	-0.188	-0.314
% reduction from baseline	-	-1.58%	-2.10%	-2.86%	-4.76%

Note: Exhibits A.2-A.5 show the derivation of the above figures.

(1) New riders only.

(2) These represent the percentage change in the baseline passenger-km for all employees in Canadian cities with transit. They differ from the modal shifts shown in Exhibit 8.5, which only apply to recipients of transit benefits.

### **8.6 OTHER EMISSIONS IMPACTS**

In addition to having impacts on greenhouse gas emissions, the transit benefits initiative and related modal shifts would also reduce other airborne emissions including Particulate Matter, Sulphur Dioxide (SO<sub>x</sub>), Nitrogen Oxides (NO<sub>x</sub>), Volatile Organic Compounds (VOCs). Factors for these emissions have been developed by Environment Canada and are documented in a memorandum to the Transportation Table<sup>34</sup>. Unfortunately, factors are available for road modes and rail freight modes only and are not detailed for urban transit modes such as buses and subways. Since the figures are provided on a vehicle-km basis, it is also necessary to estimate load factors to obtain values on a passenger-km basis.

Due to the limited data on urban transit, we have chosen to focus on two emissions: Nitrogen Oxides and Volatile Organic Compounds. Information on these emissions for urban transportation is available from other sources<sup>35</sup>. The following factors were used in the calculation of other emissions impacts:

<sup>34</sup> Environment Canada, *Guidance on the Use of Transportation Emissions Spreadsheet*, Draft, April 13, 1999.

<sup>35</sup> Organisation for Economic Co-operation and Development, Environmentally Sustainable Transport (EST) Study, Phase II Project, prepared by IBI Group and A.K. Socio-Technical Consultants for Environment Canada, September 1998.

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**Exhibit 8.7: Emissions Factors for Air Pollutants (g/passenger-km)**

	1990 (g/pass-km)		2010 (g/pass-km)	
	NOx	VOC	NOx	VOC
Urban Automobile	1.2	1.9	0.86	1.21
Urban Transit	0.53	0.05	0.53	0.05

For urban automobiles, factors are based on those provided by Environment Canada for this study. Factors were converted from grams/vehicle-km to grams/passenger-km based on 1.2 persons per vehicle. The factors represent a weighted average for both light duty gasoline automobiles (80%) and light duty gasoline trucks (20%). Emissions factors for transit modes were obtained from the OECD/EST work carried out by IBI Group and AK Socio-Technical Consultants. These factors represent a number of assumptions regarding urban load factors. Factors are weighted by the primary urban transit vehicle types: bus (60%), rapid transit (25%) and commuter rail (15%). For both auto and transit modes, future growth factors were obtained from the work done for the OECD. Exhibit 8.8 provides a summary of the estimated reductions that would occur in the two airborne pollutants examined. For volatile organic compounds, the reductions would be almost the same as the percent reductions in auto passenger-km as the emissions factor for transit is essentially zero. The percentage reduction in nitrous oxides are somewhat less, but still significant, given that the factors for auto and transit are more similar.

**Exhibit 8.8: Estimated Reductions in Other Emissions (2010)**

	Baseline 2010	Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario
<b>Total Passenger-km (millions)</b>					
Auto	26,735	26,081	25,848	25,528	24,726
Transit	5,778	6,431	6,665	6,985	7,787
Total	32,513	32,513	32,513	32,513	32,513
<b>Change in Passenger-km (millions)</b>					
Auto	-	-654	-887	-1,207	-2,009
Transit	-	654	887	1,207	2,009
<b>NOx Emissions (tonnes)</b>					
Auto	23032	22469	22268	21992	21301
Transit	3048	3393	3516	3684	4108
Total	26080	25862	25784	25677	25409
<b>Change in NOx Emissions (tonnes)</b>	-	-218	-296	-403	-671
% reduction from baseline	-	-0.84%	-1.14%	-1.55%	-2.57%
<b>VOC Emissions (tonnes)</b>					
Auto	32272	31483	31201	30815	29847
Transit	295	328	340	356	397
Total	32566	31811	31541	31171	30244
<b>Change in VOC Emissions (tonnes)</b>	-	-756	-1026	-1395	-2323
% reduction from baseline	-	-2.32%	-3.15%	-4.28%	-7.13%

## 9. COST-EFFECTIVENESS

As outlined in the Analysis and Modelling Group (AMG) guidelines, it is important to clarify who bears the costs or receives the benefits of each individual measure - governments, employers, users, or society at large. It is also important to distinguish between those items which are changes in resources actually consumed and those which are transfers between stakeholders. This Chapter presents a discussion of the analysis of the costs and transfer payments incurred by individual stakeholders and by society in general. A more detailed breakdown of the cost and benefit analysis is provided in Appendix B.

### 9.1 IMPACTS ON STAKEHOLDERS

Regardless of the scenario or level of implementation, a tax free transit benefits program will result in costs for some stakeholders and benefits for others. Some of these costs and benefits are made up of transfer payments between employers, employees, government, and the transit agencies which just represent money being moved from one sector to another. By definition, the total transfers between these stakeholders will always sum to zero. In addition, however, there are real cost changes which account for changes in the level of resources consumed. Exhibit 9.1 summarizes the costs and benefits to each stakeholder. Each is discussed further in the following sub-sections.

**Exhibit 9.1: Costs and Benefits of a Tax Free Program**

Stakeholder	Costs and Benefits	Type of Cost
Employers	<ul style="list-style-type: none"> <li>- pay all or some of transit benefit</li> <li>- save in parking costs</li> <li>- may or may not adjust salaries to recover costs</li> <li>- change in corporate income taxes – transfer</li> </ul>	<ul style="list-style-type: none"> <li>- transfer</li> <li>- resource cost change</li> <li>- transfer</li> <li>- transfer</li> </ul>
Revenue Canada/Provincial Governments	<ul style="list-style-type: none"> <li>- reduction in personal income tax revenue</li> <li>- reduction in corporate income tax revenue</li> </ul>	<ul style="list-style-type: none"> <li>- transfer</li> <li>- transfer</li> </ul>
Employees	<ul style="list-style-type: none"> <li>- reduction in transit fares (due to tax free benefit); or,</li> <li>- reduction in personal income taxes</li> <li>- changes in travel costs</li> </ul>	<ul style="list-style-type: none"> <li>- transfer</li> <li>- transfer</li> <li>- resource cost change</li> </ul>
Transit Agencies	<ul style="list-style-type: none"> <li>- increased fare revenue</li> <li>- increased cost to provide additional service</li> </ul>	<ul style="list-style-type: none"> <li>- transfer</li> <li>- resource cost change</li> </ul>
Others	<ul style="list-style-type: none"> <li>- changes in external costs of auto use</li> </ul>	<ul style="list-style-type: none"> <li>- resource cost change</li> </ul>

A further discussion of these costs and benefits is provided below.

### **9.1.1 Employers**

The costs and impacts on employers depends on several factors. Under the Basic and Marketing Scenarios where the employers provide some or all of the transit benefits, they will bear a cost. Under the Flexible Benefits and Extended Mode Scenarios, the employers do not necessarily have to pay for any of the transit benefits; in these scenarios we have assumed that employees would have half of the cost deducted directly from their salaries.

As the programs become more widespread, and benefits have broadened, employers are gaining competitive advantage in attracting and retaining employees. Recently, large U.S. employers such as Chase Manhattan Bank, Citibank, Consolidated Edison and Time Warner have indicated that they are reconsidering participation since the changes introduced in the new TEA-21 legislation.

Offsetting savings to employers could be realised through reduced costs to provide employer parking. These savings would only occur if the employer presently provides parking. This is not always the case, as in many downtown areas. Savings also depend on the type of parking provided and the ability of the employer to recover these costs. It is not unreasonable to expect that significant savings in parking costs could be achieved, particularly in the case of employers who are constructing new buildings, but some employers would obviously not realise these savings immediately.

We have implicitly made the assumption that employers would pay all or part (assumed to be all or half depending on the scenario) of the costs of the transit benefit; however, even though the employer would receive some offsetting cost savings related to the deduction in the parking that they might supply, it is probable that they would try to recover their net costs, possibly from changes in other benefits and possibly from reductions in before-tax salaries. To test the implications of this, we have subdivided each of the previously defined scenarios into two:

- one sub-scenario in which the employer does not try to recover these costs and is therefore net out of pocket, but with a consequent reduction in corporate income taxes paid; and
- a sub-scenario in which the employer reduces other employee benefits and/or salaries to offset any cost increases which he would otherwise incur.

### **9.1.2 Governments**

Under all scenarios Revenue Canada and the Provincial government would receive less revenue from corporate income taxes, personal income taxes, or both. As mentioned previously, these reductions in revenue are simply economic transfers as opposed to true resource costs. Recipients of these transfers could be expected to spend their savings elsewhere thereby channelling money back into governments and the economy.

### **9.1.3 Employees**

Employees realize significant savings under any scenario. Savings would be largest if employers covered the full cost of the transit benefit without correcting for costs through salary reductions or, more likely, reductions in increases. Even if employers reduce employees' wages to compensate for any transit benefits paid by the employer, the employees will benefit from reduced personal income taxes.

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### 9.1.4 Transit Agencies

Transit agencies would be affected by any form of transit benefit program due to the anticipated increases in new transit riders and fares received. This increase in ridership is balanced by increases in costs to provide additional service to carry the extra riders.

### 9.1.5 Evaluation

In the remainder of this chapter of the report, we estimate the benefits, costs and transfers that have been outlined above. A full tableaux of these is presented in Appendix B.

	Basic Scenario		Marketing Scenario		Flexible Benefits Scenario		Extended Mode Scenario	
	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>
Governments	\$96	\$77	\$130	\$104	\$152	\$145	\$134	\$135
Transit Agencies (Savings)	(\$104)	(\$104)	(\$141)	(\$141)	(\$192)	(\$192)	(\$320)	(\$320)
Employees (Savings)	(\$235)	(\$99)	(\$319)	(\$134)	(\$239)	(\$185)	(\$198)	(\$203)
Employers	\$243	\$126	\$330	\$171	\$279	\$233	\$384	\$388
Total Transfers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

NOTES:

<sup>(1)</sup> Case 1: Employer pays benefit and is out-of-pocket

<sup>(2)</sup> Case 2: Employer breaks even by reducing salaries/benefits from all company employees

<sup>(3)</sup> Case 3: Employee and employer each pay half of transit cost and each receives tax deduction

<sup>(4)</sup> Case 4: Employee and employer each pay half of transit cost and each receives tax deduction, employer covers costs through other salary/benefits reductions.

### 9.2 RESOURCE COST IMPACTS

Resource cost impacts, as estimated in the cost analysis, are those costs and benefits that are paid by or accrue to society at large, as opposed to costs which are simply transfer payments between different stakeholders. They are true resource cost increases or savings. For the employer-provided transit benefits program, the societal cost elements include parking cost savings, increased costs to provide additional transit service, reduced personal travel costs, reduced road infrastructure costs and reduced congestion costs. The approach to quantifying each of these costs is discussed briefly below. In addition to these costs/benefits, there are also significant benefits to be gained through reduced health costs due to ground level air pollution, increased accessibility to jobs, etc. These costs will be considered at a later date by the Analysis and Modelling Group (AMG) of the National Climate Change Process.

#### 9.2.1 Parking Cost Savings

As discussed above, employers who presently provide free parking for employees will realize savings in parking costs for each employee who switches from auto to transit. A reasonable starting point assumption is to assume that the savings in parking costs would be approximately equivalent to the annual cost to provide a parking space. This assumes that the employer can use the freed parking space for another use, or can rent the space out to auto users. In the long term, there is no question that employers

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## Tax Exempt Status for Employer-Provided Transit Benefits

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will save on parking costs as new buildings can be constructed with fewer parking spaces<sup>36</sup> or as parking spaces can be shared with new occupants of areas.

The costs of providing parking for auto users consists of land costs, capital costs for buildings, and operating and maintenance costs (e.g. ticketing, snow removal, security, etc.). A number of attempts have been made to put a price on these costs. The range of annual cost estimates from various sources is shown on Exhibit 9.2.

### Exhibit 9.2: Comparison of Estimated Annual Parking Costs

Source:	Area of Applicability	Annual Cost/Space
Urban Systems, 1996	Vancouver Region	\$1,380
M.M. Dillon/R.M.O.C, 1997	Regional Municipality of Ottawa Carleton	\$900
Litman, 1996	Urban Regions	\$1,200
IBI Group (see Appendix C)	Urban Regions	\$1,000

A recent study of the cost of Parking in the Regional Municipality of Ottawa-Carleton concluded that, the total cost of parking in the RMOC is estimated be \$160.6 million per annum for an estimated 175,550 parking spaces related to private automobile travel<sup>37</sup>. These costs include both operating and capital costs of providing parking. Recognizing the inherent assumptions surrounding these figures, the Ottawa data would suggest that a typical parking space would be valued at approximately \$900 per annum.

The figure calculated from the Ottawa data is in the same order of magnitude but slightly lower than the estimates used by Litman (1996) and Urban Systems (1996). In order to provide an independent assessment of the reasonableness of these estimates, and to take into account regional differences, an analysis of parking costs was conducted for this study based on the estimated construction costs of parking (converted to annual costs) and estimated annual maintenance costs. The analysis took into account the different types of parking (e.g. underground, above ground, etc.) and the distribution of these types of parking by the size of urban area. The assumptions and calculations are provided in Appendix C. The results of this independent assessment found the annual cost of a parking space in Canada to be approximately \$1,000 per year.

For the purpose of parking cost savings, we adopted the figure of \$1,000 calculated in the independent assessment, but discounted it by 20% to reflect the fact that not all employers may be able to find an alternative use for existing parking which is made available. Therefore, the annual cost of a parking space was assumed to be \$800. This estimate is considered to be conservatively low given that the cost estimates do not include the cost of land, which can be significant in the case of large surface parking lots.

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<sup>36</sup> It is interesting to compare recent office development trends in urban and suburban areas. A recent survey of newly constructed office buildings in the GTA conducted by IBI Group found that new buildings in suburban areas are providing up to 5 parking spaces per 100 sq. m of floor space, as dictated by market forces. The same type of building constructed in the North York Central Area could be provided with a maximum of 1.2 parking spaces per 100 sq. m of floor space. Excluding land costs, the cost to provide parking in North York would be 75% less.

<sup>37</sup> The Regional Municipality of Ottawa Carleton, Planning Development Department, *The Cost of Parking in the RMOC*, prepared by M.M. Dillon Limited, February 1997.



### **9.2.2 Increased Transit Costs**

As a result of increased ridership, the transit agencies will experience increased costs as they will have to provide more transit service. However, based on discussions with the TTC marketing department and with other representatives from the transit industry, it is anticipated that much of the ridership increase could be accommodated without significant increases to service levels and incremental operating costs. This is particularly true if efforts to promote the program are directed towards suburban areas or low peak hour load factor routes within larger urban centres where average transit vehicle load factors are well below capacity. For systems with less capacity available, particularly in peak hours and peak directions, costs can be higher. We have assumed that the marginal cost of providing for additional riders is approximately 80% of the fare paid. This should be considered a judgmental estimate that is based on discussions with various transit operators.

### **9.2.3 Changes in Personal Travel Costs**

Each auto user who switches to transit will experience reduced out-of-pocket travel costs as they will pay less for automobile fuel, maintenance and depreciation (and at the same time receive the benefits of a tax reduction). On the other hand, it is reasonable to assume that some former auto users who choose to switch to transit will experience increased travel time costs or other non-quantifiable costs (e.g. loss of convenience). This is not always the case though as users of transit often state that there are benefits to using transit (e.g. they can read or do work and not have to worry about the task of driving). The net impact of switching to transit must be positive, otherwise these individuals would remain auto users. For the purpose of this study, we have quantified the real personal travel cost savings only. The non-quantifiable costs such as personal convenience are felt to be small and would vary significantly by user, location, and mode (e.g. bus vs. rail). The persons who switch from the automobile mode to the transit mode are doing so because of a relatively small subsidy and therefore it can be assumed that the inconvenience generated for them is not large.

Data from the Canadian Automobile Association indicates that the average annual cost to own an automobile in Canada is approximately \$5,700 based on 18,000 kilometres per vehicle per year, or about 27 cents per-kilometre. Average operating costs including gas, oil and tires amounts to about 8 cents per kilometre for a total of 0.34 cents per-kilometre. Assuming an average annual commuting distance of 4140 km (230 days x 9.0 km x 2 trips per day), the total annual out-of-pocket costs of commuting by auto are estimated at \$1,400/year, excluding parking costs. In other words a little less than one-quarter of the annual ownership costs would be assigned to the commuting trip. Assuming about 20% of all commuters pay for parking (see Exhibit 2.6), and an average cost of \$5 day, the average annual cost of parking would be \$230/year/auto commuter. Taking into account that all auto costs would be shared 1.2 people (the average vehicle occupancy), the total annual cost of commuting by auto is estimated to be \$1,400/year  $((\$1,400 + \$230) \div 1.2)$ . By comparison, the average transit prices are estimated at \$660/year based on an average monthly pass price of \$55. Therefore, the annual savings to the individuals as a result of taking transit rather than auto are estimated to be \$740 per year. The savings in personal travel costs for each option are shown on Exhibit B.1.

The use of the proportional costs of car ownership and their use for this calculation implies that the number of cars required can be reduced rather than just the use of them. This seems a reasonable assumption in light of the large number of two and three car households in Canada. If only operating costs were used, then instead of \$1,400 per commuter saved from the discontinued use of the car, the cost would be approximately \$500 per user.

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Throughout this study, considerable discussion with various experts has occurred on the valuation of the impacts on personal travel costs. Some commentators have suggested that value must also be placed on the convenience of the automobile. For example, if a person can be persuaded to switch by the tax-exemption, its value must be at least as great as the net benefit they previously gained from car use. It is recognized, however, that there are considerable uncertainties involved in placing a value on this net benefit.

In order to show the impacts of the alternative assumption regarding personal cost savings we have also prepared a cost analysis for the case where personal travel costs take into account the loss of benefits people would have received from car use. The results are provided in Appendix D. The key conclusion from the additional analysis is that regardless of the assumptions about personal travel cost savings, there would still be overall cost savings resulting from the transit-benefits initiative.

### 9.2.4 Reduction in External Costs due to Automobiles

There are many external costs associated with automobile travel including: air pollution related health costs, climate change, noise, accidents, congestion, parking infrastructure and “land take”. A reduction in auto use through the implementation of an employer-provided transit benefits program will have an impact on all of these costs. The cost of parking has been considered above, while the cost of climate change, accidents and health impacts will be considered at a later date by the Transportation Table. The primary externality that is directly impacted by a reduction in auto commuters, and is quantifiable, is the cost savings from reduced congestion. Current projections for most urban areas in Canada suggest that the supply of roads will not keep pace with increasing travel demand, and the result will be severe congestion.

Quantifying the impacts of reduced congestion is a difficult task because travel time delays resulting from congestion vary widely across urban regions. Several studies, including Full Cost Transportation Pricing and Cost-Based Strategies prepared by IBI Group in 1995<sup>38</sup> have attempted to value the costs of congestion. The IBI Full Cost Pricing Study found a wide range of values for congestion in the literature ranging from 0.5 to 2.4 cents per passenger-km of auto travel. Since the Full Cost pricing study, Litman has conducted an extensive review of the costs of congestion<sup>39</sup>. Based on the review, Litman suggests that the value of cost savings from reduced congestion is approximately 11 cents per passenger-km of auto travel reduced (urban peak travel in Canada). In this study, to be conservative, we have used a value of 5 cents per passenger-km shift. This value is used to simply illustrate the order of magnitude of reduced external costs from reduced auto travel. Significantly more analysis using multi-modal travel demand models for each major city in Canada would be required to develop a more precise estimate of reduced congestion from modal shifts. This is beyond the scope of this study. Similarly, this study has not tried to isolate the possible “take-back” effects that may result from reduced congestion. This take-back effect would only occur, however, if roads are expanded at the same rate as they have been historically, otherwise there would be cost savings from reduced infrastructure. Other complementary measures that are being considered by the transportation table to reduce private automobile use should eliminate the take-back effect.

Given that the various options analysed in this study resulted in approximately 650 - 2,000 million passenger-km being shifted to transit, the total savings in external costs could be in the order of \$32 - \$100 million per year.

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<sup>38</sup> *Full Cost Transportation and Cost-Based Pricing Strategies*, prepared by IBI Group and Boon, Jones and Associates for the Transportation and Climate Change Collaborative, November 1995.

<sup>39</sup> Litman, T., *Transportation Cost Analysis: Techniques, Estimates and Implications*, Victoria Institute of Transport Policy, 1996.

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Since these costs are long term and fairly uncertain, they should be treated with a degree of caution.

### 9.2.5 Summary of Resource Cost Impacts

Exhibit 9.3 summarizes the estimated monetized benefits to society (taxpayers) that would result from the implementation of the transit benefits program. The results are shown for the horizon year 2010. These benefits range from \$296 million to \$911 million per year. The largest portion of the benefits is due to savings in auto commuter costs. If the auto commuter costs are changed from \$1,400 to \$500 to represent variable costs only, this would be reduced but the results would still be quite positive.

Thus, the results presented in Exhibit 9.3 are quite robust; major savings in the calculation of personal travel costs are in parking cost savings and will not alter the results.

The key message from these figures is that society will ultimately benefit if more commuters choose to use public transit to travel to and from work. The benefits are a direct result of the fact that it is ultimately more efficient to transport more people in larger but fewer vehicles than it is to transport people in private automobiles.

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**Exhibit 9.3: Summary of Resource Cost Benefits in 2010 (\$1999 millions)**

	Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario
Change in Auto Passenger-km (millions) (See Appendix A)	-653.65	-887.08	-1207.03	-2009.08
Parking Cost savings <sup>(1)</sup>	\$126.3	\$171.4	\$233.2	\$388.2
Increased Transit Costs for New Transit Users <sup>(2)</sup>	-\$83.4	-\$113.1	-\$153.9	-\$256.2
Reduced Personal Travel Costs <sup>(3)</sup>	\$221.0	\$300.0	\$408.2	\$679.4
Reduced in External Costs <sup>(4)</sup>	\$32.7	\$44.4	\$60.4	\$100.5
<b>Total Resource Costs</b>	<b>\$296.7</b>	<b>\$402.6</b>	<b>\$547.8</b>	<b>\$911.8</b>

Notes:

<sup>(1)</sup> Based on \$800 per auto commuter reduced

<sup>(2)</sup> Based on 80% of new revenue

<sup>(3)</sup> Based on \$1,400 per year in auto commute costs

<sup>(4)</sup> Based on 5 cents per auto km reduced (to reflect savings due to reduced congestion)

	Basic Scenario	Marketing Scenario	Flexible Benefits Scenario	Extended Mode Scenario
Change Auto Passenger-km (millions) (See Appendix A)	-653.65	-887.08	-1207.03	-2009.08
Parking Cost savings <sup>(1)</sup>	\$126.3	\$171.4	\$233.2	\$388.2
Increased Transit Costs for New Transit Users <sup>(2)</sup>	-\$83.4	-\$113.1	-\$153.9	-\$256.2
Reduced Personal Travel Costs <sup>(3)</sup>	\$221.0	\$300.0	\$408.2	\$679.4
Reduced in External Costs <sup>(4)</sup>	\$49.0	\$66.5	\$90.5	\$150.7
<b>Total Resource Costs</b>	<b>\$313.0</b>	<b>\$424.8</b>	<b>\$578.0</b>	<b>\$962.1</b>

Notes:

<sup>(1)</sup> Based on \$800 per auto commuter reduced

<sup>(2)</sup> Based on 80% of new revenue

<sup>(3)</sup> Based on \$1,400 per year in auto commute costs

<sup>(4)</sup> Based on 7.5 cents per auto km reduced (low end estimate)

### 9.3 TRANSFER COSTS

In addition to estimating the changes in resource costs, the transfers have also been estimated for each scenario.

As mentioned previously, because of the division of each of the scenarios into two, those where the employer pays the benefit and its out of pocket and those where offsetting cost reductions are made by the employer, there are actually eight scenarios.

#### 9.3.1 Projected Impact on Federal and Provincial Revenues

A concern of the federal Finance Department is whether tax expenditures of this kind are cost-effective. Other issues of concern are the fact that the program increases rather than eliminates tax preferences and that the program has uncertain impacts on federal government revenues. Indirectly the provincial

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governments would also receive lower tax revenues but, to our knowledge, provincial governments have not raised any concerns regarding the program.

Exhibit 9.4 provides a breakdown of the estimated financial impacts on Finance Departments' (federal and provincial) revenues by year. As shown, the impacts on both the federal and provincial governments combined in the first few years are small but grow with increasing transit use. The impacts in 2005 range from \$60 million to \$140 million depending on the scenario and how the employers decide to recover the benefits that they pay out. By 2010, the impacts would range from \$77 to \$152 million depending on the specific scenario. The impacts in 2010 are based on the assumption that about 30% of all employers would offer the benefit under the basic scenario and 60% would offer it under the extended mode scenario. The scenario with the maximum impact with respect to Federal and Provincial revenues would be the flexible benefits scenario followed by the extended mode scenario.

**Exhibit 9.4: Summary of Estimated Impacts on Finance Department Revenues (Federal + Provincial) (\$ 1999 Millions)**

Year	Basic Scenario		Marketing Scenario		Flexible Benefits Scenario		Extended Mode Scenario	
	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>
2000	\$12	\$9	\$18	\$15	\$29	\$27	\$35	\$35
2001	\$24	\$19	\$39	\$31	\$62	\$59	\$76	\$77
2002	\$37	\$30	\$61	\$48	\$100	\$95	\$110	\$110
2003	\$51	\$41	\$85	\$68	\$122	\$116	\$120	\$120
2004	\$66	\$52	\$101	\$80	\$134	\$127	\$126	\$127
<b>2005</b>	<b>\$75</b>	<b>\$60</b>	<b>\$108</b>	<b>\$87</b>	<b>\$140</b>	<b>\$133</b>	<b>\$128</b>	<b>\$128</b>
2006	\$82	\$65	\$115	\$92	\$146	\$139	\$129	\$130
2007	\$86	\$69	\$119	\$95	\$148	\$140	\$130	\$131
2008	\$90	\$72	\$123	\$98	\$149	\$142	\$132	\$132
2009	\$93	\$75	\$127	\$101	\$151	\$143	\$133	\$134
<b>2010</b>	<b>\$96</b>	<b>\$77</b>	<b>\$130</b>	<b>\$104</b>	<b>\$152</b>	<b>\$145</b>	<b>\$134</b>	<b>\$135</b>
2011	\$99	\$79	\$133	\$106	\$154	\$146	\$136	\$136
2012	\$101	\$81	\$134	\$107	\$155	\$148	\$137	\$138
2013	\$103	\$82	\$135	\$108	\$157	\$149	\$138	\$139
2014	\$104	\$83	\$137	\$109	\$158	\$151	\$140	\$140
2015	\$105	\$84	\$138	\$110	\$160	\$152	\$141	\$142
2016	\$106	\$85	\$139	\$112	\$162	\$154	\$142	\$143
2017	\$107	\$86	\$141	\$113	\$163	\$155	\$144	\$145
2018	\$108	\$86	\$142	\$114	\$165	\$157	\$145	\$146
2019	\$109	\$87	\$144	\$115	\$166	\$158	\$147	\$148
<b>2020</b>	<b>\$110</b>	<b>\$88</b>	<b>\$145</b>	<b>\$116</b>	<b>\$168</b>	<b>\$160</b>	<b>\$148</b>	<b>\$149</b>

**NOTES:**

- (1) Case 1: Employer pays benefit and is out-of-pocket
- (2) Case 2: Employer breaks even by reducing salaries/benefits from all company employees
- (3) Case 3: Employee and employer each pay half of transit cost and each receives tax deduction
- (4) Case 4: Employee and employer each pay half of transit cost and each receives tax deduction, employer covers costs through other salary/benefits reductions.

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**Tax Exempt Status for Employer-Provided Transit Benefits**

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**9.3.2 Transfers to Transit Agencies**

The transit agencies receive increased revenues from their new users. We have valued these at \$660 per year (\$55 per month) for each new transit rider.

**9.3.3 Employees**

Employees as a group receive benefits in the form of transfer payments. Depending upon the scenario this is made up of:

- the proportion of the transit benefit which is paid by the employer. As indicated earlier, this varies considerably by scenario;
- any personal income tax savings.

**9.3.4 Employers**

Employers also generate transfer payments made up of:

- changes in compensation to employees;
- transit benefits paid;
- changes in corporate income tax (usually positive).

**9.3.5 Total Transfers**

Exhibit 9.5 provides a summary of the cost impacts on stakeholders in 2010. These are essentially transfers and do not represent real resources costs.

**Exhibit 9.5: Transfer Payments Between Stakeholders - 2010 (\$1999 millions)**

	Basic Scenario		Marketing Scenario		Flexible Benefits Scenario		Extended Mode Scenario	
	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>
Governments	\$96	\$77	\$130	\$104	\$152	\$145	\$134	\$135
Transit Agencies (Savings)	(\$104)	(\$104)	(\$141)	(\$141)	(\$192)	(\$192)	(\$320)	(\$320)
Employees (Savings)	(\$235)	(\$99)	(\$319)	(\$134)	(\$239)	(\$185)	(\$198)	(\$203)
Employers	\$243	\$126	\$330	\$171	\$279	\$233	\$384	\$388
<b>Total Transfers</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

NOTES:

- <sup>(1)</sup> Case 1: Employer pays benefit and is out-of-pocket
- <sup>(2)</sup> Case 2: Employer breaks even by reducing salaries/benefits from all company employees
- <sup>(3)</sup> Case 3: Employee and employer each pay half of transit cost and each receives tax deduction
- <sup>(4)</sup> Case 4: Employee and employer each pay half of transit cost and each receives tax deduction, employer covers costs through other salary/benefits reductions.

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## Tax Exempt Status for Employer-Provided Transit Benefits

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### **9.4 REVENUE LOSS PER NEW TRANSIT USER**

One of the criticisms of a tax-free transit benefits program is that many of the potential recipients are already using transit and therefore the revenue loss (in effect a subsidy) per new user would be high. While this is true to some extent, as discussed elsewhere in this report, tax-free transit benefits would also help to retain the existing "choice" transit riders who are highly sensitive to increasing costs of transit. Regardless of how the costs per user are perceived, it is important to show the costs per new user to afford comparison with other possible competing measures.

Based on the assumptions presented in this report, the estimated tax revenue losses to the federal and provincial governments per new transit user for the four scenarios would be as follows:

	Revenue Loss per New Transit User (\$1999)
Basic Scenario	\$487-\$608
Marketing Scenario	\$487-\$608
Flexible Benefits Scenario	\$496-\$522
Extended Mode Scenario	\$277-\$278

Note: The above figures are derived by dividing the total government costs by the number of auto commuters who switch to transit, both of which are reported on Exhibit B.1. It does not include any impacts of additional transit use by existing users or of retention of existing users.

The revenue loss varies within each scenario depending on how much the employer makes offsetting cuts in other benefits and salaries.

The revenue loss per new rider would be the same for all horizon years, as the ratio of new to existing riders attracted does not change by year in our analysis. If the costs were presented in terms of new rider plus choice rides maintained, the costs would be approximately one half.

### **9.5 COSTS PER TONNE OF CO<sub>2</sub> REDUCED**

As outlined in the Analysis and Modelling Group Guidelines, in order to compare estimates of the cost effectiveness among options, the costs must be estimated on a consistent basis. In particular, "tax reductions allowed by government to support any option will be counted as costs of the program." The rationale for this is that the government tax reductions could be used for alternative options that could produce greater benefits. On the other hand, the AMG Guidelines state that new taxes or fees are not to be considered costs in the cost effectiveness ratios for comparison with options that impose real costs of additional resources use. Subsidies or tax relief should be treated in the same way. All attempts have been made in this study to distinguish between real costs and transfers to governments. The Table can then determine which costs are appropriate for use in the cost-effectiveness comparison.

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The revenue loss per tonne of CO<sub>2</sub> reduced are shown in Exhibit 9.6 below for the 2010 horizon year. The cost per tonne of CO<sub>2</sub> would increase slightly over the analysis period if automobile fuel efficiency improved at the same rate or faster than transit vehicle fuel efficiency.

When costs per tonne are looked at in terms of the revenue loss to governments, it is in the order of \$750-\$950/tonne for the basic scenario and \$430/tonne for the extended mode scenario. These revenue losses however, are more than outweighed by the benefits to society which amount to some \$2,900 per tonne in 2010. If the auto user cost savings were revised to reflect marginal costs only, the benefit per tonne would drop from approximately \$2,900 to \$1,500 per tonne. There would also be cost savings realized as a result of improved health benefits, although we do not attempt to quantify these costs in this study.

**Exhibit 9.6: Cost Estimates per Tonne of CO<sub>2</sub> Equivalents Reduced in 2010 (\$1999)**

	Basic Scenario		Marketing Scenario		Flexible Benefits Scenario		Extended Mode Scenario	
	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 1: Employer Pays All <sup>(1)</sup>	Case 2: Employer Breaks Even <sup>(2)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>	Case 3: Employer Pays Half <sup>(3)</sup>	Case 4: Employer Pays Half and Breaks Even <sup>(4)</sup>
Total GHG Reduction (CO <sub>2</sub> tonnes)	-102,073	-102,073	-138,525	-138,525	-188,489	-188,489	-313,736	-313,736
<b>TRANSFERS (\$/tonne)</b>								
Governments	\$941	\$753	\$941	\$753	\$808	\$768	\$428	\$430
Transit Agencies (Savings)	(\$1,021)	(\$1,021)	(\$1,021)	(\$1,021)	(\$1,021)	(\$1,021)	(\$1,021)	(\$1,021)
Employees (Savings)	(\$2,301)	(\$969)	(\$2,301)	(\$969)	(\$1,268)	(\$984)	(\$631)	(\$646)
Employers	\$2,381	\$1,237	\$2,381	\$1,237	\$1,481	\$1,237	\$1,224	\$1,237
Total Transfers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>RESOURCE COSTS (\$/tonne)</b>								
Parking Cost savings	(\$1,237)		(\$1,237)		(\$1,237)		(\$1,237)	
Increased Transit Costs for New Transit Users	\$817		\$817		\$817		\$817	
Reduced Personal Travel Costs	(\$2,166)		(\$2,166)		(\$2,166)		(\$2,166)	
Reduced External Costs	(\$320)		(\$320)		(\$320)		(\$320)	
Total Resource Costs (Savings)	(\$2,906)		(\$2,906)		(\$2,906)		(\$2,906)	

NOTES:

<sup>(1)</sup> Case 1: Employer pays benefit and is out-of-pocket

<sup>(2)</sup> Case 2: Employer breaks even by reducing salaries/benefits from all company employees

<sup>(3)</sup> Case 3: Employee and employer each pay half of transit cost and each receives tax deduction

<sup>(4)</sup> Case 4: Employee and employer each pay half of transit cost and each receives tax deduction, employer covers costs through other salary/benefits reductions.

### 9.6 NET PRESENT VALUE ANALYSIS

The Analysis and Modelling Group of the NAICC recommends that for the purposes of cost-effectiveness comparisons, all future costs and benefits should be represented by their equivalent “present” values. It is recommended that a 10% (real) discount rate be used to calculate these net present values.

All costs and benefits presented in the main body of this report are presented in annual terms and are expressed in constant, 1999 dollars. The conversion of these annual costs and benefits to net present values is provided for the Flexible benefits scenario in Appendix E. For the Flexible benefits scenario, the total lifetime GHG reduction, which can be calculated from Exhibit A.4 is 3.61 MT.



## **10. ECONOMIC, SOCIAL AND OTHER ENVIRONMENTAL IMPACTS**

### **10.1 ECONOMIC IMPACTS**

To the extent that the employer-provided tax exempt transit benefits measure encourages modal shift to transit through transfers from foregone tax revenues to employers and/or employees, it will reduce costs of transportation of recipients and increase the use of the transportation system. It could be said that a “subsidy” such as this may distort the market but, given the hidden subsidies supplied to auto users (who do not pay their full costs and receive parking subsidies), it is really an attempt to level somewhat the playing field. The concept is the “Theory of Second Best” that states that if one market distortion cannot be removed, the best thing to do may be to counter it. In this case, the tax-free transit benefit helps to offset the inequities and economic inefficiencies of auto-dependence, and other hidden subsidies supporting auto-use.

Since the main target market for the transit benefit would be “choice” transit users and new transit riders who would increase transit use, but would in most cases not give up personal vehicle ownership, the overall economic impact on the transportation equipment manufacturing and distribution industry would likely be small.

International research on the wealth of global cities suggests that Gross Regional Product (GRP) does not correlate with the degree of auto use.<sup>40</sup> In addition, “within the broad category of transportation spending, the evidence indicates that public transit spending carries more potential to stimulate long run economic growth than does highway spending.”<sup>41</sup>

### **10.2 SOCIAL IMPACTS**

#### **Equity**

Finance Canada has expressed concern that the proposed transit tax-exemption measure would be unfair to those who do not have access to employer-provided transit benefits, and that it would not recognize or reward those who choose other emissions-friendly modes of transportation.

The relative subsidy levels for auto and transit users remains controversial. However many studies have shown that when all costs are accounted for, including the environmental and social externalities associated with transportation, auto use is more heavily subsidized than transit. The result is inequitable distribution of total costs to society that favours the users of personal vehicles over transit users.

Since the majority of commuters receive free parking at their place of employment, there is an inequity for those employees who use transit and do not receive free parking. In addition these persons are usually not taxed on this benefit. The tax-exempt, employer-provided transit benefit would provide more equity in the workplace for transit commuters.

Exhibit 10.1 summarizes international estimates of the total costs of personal vehicle and public transit use. The table includes capital and operating costs, subsidies and external costs. In the two cases assessed

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<sup>40</sup> *Sustainability and Cities, Overcoming Automobile Dependence*, P Newman, J Kenworthy, Island Press, 1999, Chapter 3.

<sup>41</sup> *Transportation Spending and Economic Growth*. D. Aschauer, E. Campbell, Bates College, reported in *Earthword: The Journal of Environmental and Social Responsibility* 4(38), 1991

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in an IBI report<sup>42</sup>, the differences relate to the externalities included. The Auto 1 case includes primarily the health and policing costs associated with air pollution and accidents. The Auto 2 case also includes estimates made by Litman (1992) of the full costs of parking, the economic costs of congestion, and the increased costs of urban development and community operations that result from the land-extensive requirements of the personal vehicle.

**Exhibit 10.1**  
**Ratio of Costs of Personal Vehicle Mode to Rail and Bus Transit**  
(cents per passenger kilometre - includes capital, operating and external costs)

Source	Car/Transit Ratio
Newman & Kenworthy 1999 <sup>43</sup> (Australian cities-1991)	1.6
IBI 1995 Auto 1 <sup>44</sup> (Canadian cities-1994)	1.1
IBI 1995 Auto 2 (per Litman) (Canadian cities-1994)	1.4

The referenced studies of urban transportation subsidies and externalities generally include the costs to governments of building and operating road and transit infrastructure. However, they do not include a wide range of government subsidies and support to the petroleum and vehicle manufacturing industries. As a result, the differences between total societal costs of transit and personal vehicle use are understated. A recent U.S. study estimates that the “real” price of gasoline in that country is in the range of U.S.\$ 4.60 to \$14.14 per gallon, compared to an average price at the pump of \$1.00 per gallon, when all costs including tax subsidization of the oil industry, military protection costs for oil shipment and motor vehicle services and all other externalities are accounted for.<sup>45</sup> We are not aware of any similar study in Canada.

There are many exemptions in Canada’s tax system that apply to limited numbers of individual or corporate tax payers. The use of tax incentives to achieve public objectives is common. The proposed transit benefits program would be a new incentive from the federal government to encourage a change in citizens’ travel mode choice on a national basis.

The program would benefit both existing transit riders as well as new riders. Concern has been expressed that the tax benefit would be a windfall for existing riders without any favourable impacts. As noted in Section 2.5, approximately 50% of transit riders are “choice” riders who have the option of driving their cars or of using transit for at least a portion of their travel. They are also the group that is most likely to switch from transit to personal vehicles over time, if transit fares continue to increase relative to auto costs.

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<sup>42</sup> *Full Cost Transportation and Cost-Based Pricing Strategies*, IBI Group for Ontario Transportation and Climate Change Collaborative, November 1995, Exhibit S.3

<sup>43</sup> *Sustainability and Cities, Overcoming Automobile Dependence*, P. Newman, J. Kenworthy, Island Press, 1999, Table 2.5

<sup>44</sup> *Full Cost Transportation and Cost-Based Pricing Strategies*, IBI Group for Ontario Transportation and Climate Change Collaborative, November 1995, Exhibit S.3

<sup>45</sup> *The Real Price of Gasoline*, International Center for Technology Assessment, 1998

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The “choice” rider is also more likely to be a full fare rider using transit part time. A transit benefits program would provide an incentive for existing riders to use transit more. The 1994 study of the impact of tax free transit benefits in the San Francisco Bay Area, prior to the 1998 tax changes of the TEA 21 legislation, indicated that existing riders increase transit use by an average of three trips per week. Hence, incremental benefits are realized by both existing and new riders. For all transit riders, a transit benefits program would provide a levelling benefit relative to the overall subsidies enjoyed by auto-users.

Design of a tax exempt employer-provided transit benefit program to maximize participation rates would minimize perceived inequity. The Market Based Scenario analysed in Section 8, ensures that employer and employee participation is encouraged through aggressive marketing by the transit industry. There are strong indications that the transit industry in Canada is ready for this challenge. The President of the Canadian Urban Transit Association has made the following statement:

*“It has been CUTA’s position to engage in a major effort to co-ordinate the preparation of a nationwide marketing program that would assist individual transit agencies in successfully promoting the adoption of employer-provided transit passes to their maximum extent. This would be done in a fashion that provides sufficient flexibility to allow individual agencies to target their efforts to those areas where the optimal results can be achieved, given the availability of existing transit capacity, and the marginal cost of adding capacity where required.*

*Indeed the promotion of a tax exemption for employer-provided transit passes has been endorsed by the CUTA Board of Directors as a major policy priority for some time, and the success of such an initiative depends entirely on the ability of individual transit systems to engage in effective marketing that will convince employers of the value of the program. CUTA is committed to spearheading the marketing effort as its role once the measure is introduced.”<sup>46</sup>*

Extending the program to allow employees to purchase transit fares or passes through employers from pre-tax income would have a major impact on participation rates as experience since the latter half of 1998 in the U.S. under the new rules of TEA 21 has shown.

Experience in the United States indicates that participation in transit tax-benefit programs continues to increase more than 10 years after they were first introduced. Prior to TEA-21, employers had been required to bear the whole cost of the transit benefits. Now they can split or have the employees pay for part of the cost from pre-tax earnings and employer participation rates are increasing more rapidly.

Employees, as they become aware that their employer is eligible, would be motivated to exert pressure for participation. Since the Canadian labour movement is an active proponent of the employer-provided tax exempt transit benefits, it can be expected to encourage employers to participate.

The employer-provided tax exempt transit benefits must also be seen in the context of other elements of the national sustainable transportation strategy that is emerging from the work of the Transportation Table. To the extent that major modal shift from personal vehicles to public transit will be a principal focus of the strategy, increasing percentages of Canadians will have access to public transit in the future. Therefore, the proposed employer-provided tax exempt transit benefits measure would be available to an increasing majority of commuters in the long term.

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<sup>46</sup> Personal Communication from Michael W. Roschlau, President of CUTA, April 8, 1999

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Critics suggest that the transit benefits program would not directly benefit those who use other environmentally sustainable modes such as walking and cycling. The transit benefits program is a very focussed measure targeted at mode shift from personal vehicles to public transit. It is assumed that an effective national strategy for meeting the Kyoto target for greenhouse gas emissions reduction in the transportation sector must include a number of other policy interventions that will encourage many other behaviour changes, including increased market share for active transportation modes. Examples of measures that would encourage more active transportation include land use intensification and urban design policies, increased priority for investment in walking and cycling infrastructure, increased gasoline taxes and many others. It is not realistic to expect one policy measure such as the employer-provided tax exempt transit benefits to influence change in all modes.

It would be possible to extend employer-provided tax exempt transit benefits for activities such as ridesharing or van-pooling that is arranged through employers. At present, such programs represent a small segment of the commuting market, with the result that inclusion within the employer-provided tax exempt transit benefits may or may not be cost effective.

An overarching equity issue in the auto vs transit debate is the social isolation of the large percentage of citizens who do not have direct access to an automobile to meet their mobility needs. These include the elderly, children and youth, the disabled and those lowest on the income scale. Transit is a key to mobility for such people, along with walking and cycling and other forms of public transportation. The tax-exempt employer-provided transit benefit, by increasing ridership, would have the effect of increasing transit service levels (routes and frequency), thereby improving mobility for those with limited transportation options. The current trend to higher transit fares, discussed in Section 3, has a negative impact on mobility and equity for these groups.

### ***10.3 PRESSURE FOR MORE GENERAL TAX RELIEF***

Finance Canada has indicated concern about increased pressure for more general tax relief if the employer-provided tax exempt transit benefits is adopted. They have suggested that while a general deduction for the cost of a transit benefit would solve this issue, it would be more expensive and not likely to be cost effective.

The employer-provided tax exempt transit benefits has a specific objective to induce modal shift by commuters from personal vehicles to public transit. From a GHG reduction perspective the measure is focussed on peak hour travel. It is not intended as a primary measure for reducing off-peak, non-commuting personal vehicle use, although it would have a positive impact on this segment of the market. Pressure for broader tax relief could be resisted on the basis of the focussed objective of the measure, along with the response that a number of other policy measures are being considered for meeting specific goals within the overall GHG reduction strategy for the transportation sector.

As proposed, the employer-provided tax exempt transit benefits is intended to be implemented only through employers in order to target the journey to work.

### ***10.4 REPLACEMENT OF OTHER SUBSIDIES***

Tax exemption for these benefits is in effect a subsidy from the federal and provincial government to transit users. It is important to distinguish the fact that it is to transit users, not to transit companies. The transit agencies receive the effect of the subsidies only if they can attract and hold additional passengers. We therefore believe that these subsidies will provide more incentive for transit agencies to provide attractive, cost competitive services than previous subsidy policies did.

**10.5 SUPPORT FOR TAX-EXEMPT TRANSIT BENEFITS**

The tax-exempt employer-provided transit benefit program has been endorsed by a very broad spectrum of industry association, business, labour, public transportation, citizen and environmental groups, municipal governments and multi-stakeholder advisory groups such as the National Round Table on the Environment and the Economy. The measure is one that the federal government could implement with the prospect of broad public acceptance. A recent national survey conducted by Environics on behalf of CUTA indicated “73% support for a change in federal tax law so that people would not have to pay income tax on transit passes provided by employers.”<sup>47</sup> The tax free transit benefits program provides an incentive, rather than a disincentive through regulation or taxation, for businesses and employees to change travel patterns in a sustainable way.

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<sup>47</sup> Urban Transit Expressions, Canadian Urban Transit Association, February 15, 1999.

## **11. IMPLEMENTATION ISSUES**

### **11.1 LEGISLATION**

Legislation would be required to enable the federal government to implement the proposed Tax-Exempt Employer-Provided Transit Benefit initiative. Possibly the easiest method would be implementation through the Federal Budget. There are a number of considerations for such legislative change:

- Transportation in Canada and worldwide is becoming increasingly unsustainable, and urgent action is required to reverse this ominous trend.
- Achieving more sustainable urban transportation is particularly important because some 80% of Canada's population lives in urban areas. Urban transportation problems are escalating, with increasingly negative impacts on the health and wellbeing of Canadians, particularly because of the continuing rise in dependence on personal road vehicles.
- Increased use of public transit will be an essential part of a strategy for meeting the Kyoto targets and beyond for GHG reduction from the transportation sector. The trend of declining modal share for transit in Canada's urban centres will need to be reversed for this to happen.
- Changing the relative pricing of transit and personal vehicle use in areas served by transit, will be a necessary condition for inducing modal shift to the latter.
- The tax exempt employer-provided transit benefit:
  - is precisely targeted at the portions of the commuter market most amenable to mode shifting, namely increased transit use by "choice" transit riders and new transit ridership by "choice" auto-users;
  - improves equity for all transit riders, since it partially offsets the large implied subsidy available to users of personal vehicles who do not pay for the full external costs imposed on society by their modal choice;
  - must be viewed as only one element of an integrated package of measures involving all levels of government for achieving sustainable transportation.
- The tax exempt employer-provided transit benefit will result in the greatest modal shift to transit and maximum GHG emissions reduction if:
  - Employers and employees are given the flexibility to maximize their mutual benefit. To achieve this objective, legislation would provide for tax exemption for the employer purchase of fare media, or for the employee to purchase fare media from pre-tax income through the employer, or for the employer and employee to share the cost of the fare media and the resulting tax benefits. This principle exists in current U.S. legislation.
  - The federal tax-exemption is accompanied by aggressive marketing programs of the public transit industry targeted at both employers and employees. As noted in Section 10.2, the Canadian Urban Transit Association has confirmed the commitment of the transit

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industry to promote the tax-exempt transit benefit as a key element of their marketing efforts to increase ridership.

- Changes in legislation allow for:
  - access to tax-free benefits in many market segments, where public transit exists;
  - flexibility in implementation mechanisms through the use of regulations that maximize mutual benefit for employers and employees, and ensure simplicity in administration. Experience in the U.S. has shown that employers will participate only if program administration is very simple and if they see “good will” for their employees as a key benefit. This was stressed in focus groups with employers in the New York region in 1985. Minimizing the administrative burden on employers has been a central objective in the design of tax-free benefit programs in the U.S. ever since.<sup>48</sup>

The tax-exempt transit benefits initiative is one initiative that can be implemented immediately, does not evoke strong political challenges, and one where the federal government can play a key role.

### 11.2 REGULATION

Regulation under Income Tax Act revisions to allow tax-exemption of employer-provided transit benefits should include the following considerations:

- **eligibility criteria**, including sizes and types of employers, treatment of the self employed and transferability;
- **allowable fare media**, such as monthly transit passes with photo I.D., smart cards, tickets and tokens. The following observations relate to experience in the U.S.:
  - Employer pass programs have existed in Canada in the absence of tax-free benefits and in the U.S. before and since tax-free transit benefits have been allowed in legislation. These programs, that involve employer purchase of transit passes from transit agencies and distribution to employees have had negligible participation and impact on transit ridership because employers had little incentive to participate. In addition to increased costs of offering the benefit, net of employer tax deductions, the employer also incurred an additional administrative burden in handling transit passes.
  - Employer participation only became significant with the advent of voucher programs administered by third party agencies such as Commuter Check Services Corporation, operating in ten cities throughout the United States and TransitChek, a public agency in the New York region. Under the voucher system, the employer has limited reporting responsibilities and has only to purchase and distribute vouchers to employees who accept the benefit.
  - Cash purchases of transit passes, tokens or tickets are not eligible under U.S. rules for tax-free transit benefits because:

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<sup>48</sup> Personal communication, Richard Oram, April 10, 1999

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- they complicate reporting for tax purposes, thus violating the “Keep it simple” rule, and
- cash purchases can lead more easily to abuses, leading to pressure from tax authorities for increased reporting.
- **reporting mechanisms.** The simplest reporting requirement would be for employers to record the cost of transit fares or vouchers purchased through transit agencies or third party commuter service companies. In the case of purchase from employee pre-tax earnings, employers would be required to check-off such purchases administratively, as they now do for other benefits.
- The employer-provided tax-exempt transit benefits would be a facilitative and voluntary program that an employer can choose to implement and benefit from if they wish. The employer-provided tax exempt transit benefits program has few detractors in the U.S.
- The U.S. TEA 21 legislation would be a good model for the Government of Canada to consider in designing a tax-exemption program for Canada, since it appears to reflect current “Best Practices” in this field. Consultation with the Canadian transit industry and employers would be critical to successful adaptation of U.S. experience to Canadian market and institutional conditions.

### 11.3 BROADENING THE TAX BASE

The trend in Canada’s tax system has been towards eliminating tax preferences and broadening the tax base. Finance Canada is concerned that the employer-provided tax exempt transit benefits goes against this trend. In this case, the federal government’s policy objective of reducing GHG emissions is in potential conflict with its objectives for the tax system. However, we believe that this is a focussed and narrow instrument intended to achieve a specific purpose. The issue is tied directly to the need to reduce GHG emissions.

There are many other instruments which could be used to broaden the tax base. Many international studies have suggested the importance of using tax policy as a means of internalising the external costs not currently paid for by those who benefit from transportation, and for encouraging specific changes in behaviour. In this respect, fuel taxes that directly impact the use of fossil fuels are among the broadest based instruments available to governments, since they can impact the decisions of all who manufacture, distribute, provide fuel for and use road vehicles. It is clear that a fuel tax policy would influence a broader base of tax payers than the employer-provided tax exempt transit benefits initiative, since use of transit by commuters will be much lower than overall auto use under any plausible strategy for meeting the Kyoto target.

Other available economic instruments include taxation of parking, vehicle registration fees, road pricing, as well as changes to property taxes and location-specific development charges to encourage more compact, mixed use urban form. In addition, there are a number other incentives that could be provided through changes in tax policy. All such measures would similarly affect specific groups of individuals or stakeholder groups, and could be challenged on the grounds of moving tax policy away from its objective of broadening the base.



#### **11.4 EMPLOYERS REDUCING WAGES TO OFFSET TAX BENEFIT TO EMPLOYEES**

Finance Canada has expressed concern that employers might reduce employee wages to offset the costs of participation in a transit tax benefit plan. In this event both the employer and the employee would receive benefits. Under the basic scenario, the employer can have the same after-tax costs as before the tax benefit program and has gained employee good will. The employee has received a net increase in after tax compensation by the amount of the employer's tax saving.

For the flexible or extended benefit scenarios, where the employee is allowed the option under the tax regime to purchase transit media through the employer from pre-tax earnings, the employer has no substantial additional costs and would have no reason for reducing the wages of the participating employee.

#### **11.5 DELIVERY MECHANISMS**

There are several possible delivery mechanisms for the tax-exempt employer-provided transit benefit program. We discuss implications for each in this section.

- **Purchase and Distribution of Monthly Transit Passes by the Employer.** As implemented in the U.S., this option has been unattractive to employers because of the significant costs and administrative burden associated with purchase and distribution of passes and return of unused passes to the transit agency. The Canadian transit industry is considering a simplified payroll deduction mechanism that combines the employer-provided benefit with a discount from the transit provider and with a high level of convenience for users. Victoria and Vancouver presently provide employers with a bus pass payroll deduction scheme (not tax exempt). Ottawa is expected to implement one soon. These schemes are specifically designed for simplicity with the option of including a tax-exempt benefit when available.
- **Purchase of Transit Passes and Sale to the Employee at a Discount.** Under this option, the employer would provide a tax free discount for the transit pass purchased by the employee. Under the scenarios described in this study, there would be opportunities for cost sharing between employers and employees.
- **Sale of Transit Vouchers by Transit Agencies to Employers for Distribution to Employees.** Transit agencies would sell tax free vouchers in various denominations (e.g. \$10, \$15, \$20, etc.) to employers. Employers would distribute vouchers to employees who agree not to use employer-provided parking. Employers would have minimum administration costs. This could be a practical alternative for cities served by one transit agency. Companies with employees in a number of cities would have to deal with the transit agencies in each city.
- **Sale of Transit Vouchers by Public or Private Commuter Services Agencies in Urban Regions.** The Commuter Services entity would sell tax free vouchers to employers redeemable for transit fares on any transit service in the region. This option would provide the minimum administration for participating employers. Employers with operations in cities outside the major urban centres served by the Commuter Services Agency would have to purchase vouchers through transit operators in other cities.

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- **Sale of Transit Vouchers by a National Public or Private Commuter Services Agency.** This option could provide the least administrative cost alternative for large corporations or government organizations with nationwide operations. It would be of less importance to smaller employers located in one or a few cities and for whom the administrative burden would be lower than that of larger organizations.

## **12. CONCLUSIONS**

The purpose of this study is to examine the potential effectiveness of changing the tax status of employer-provided transit benefits. A number of proposals for changing the tax status of employer-provided transit are developed and compared in terms of their ability to reduce greenhouse gas emissions as well as their cost effectiveness. The key conclusions of the study, as well as a discussion of implementation issues, are provided below.

### **12.1 KEY CONCLUSIONS**

#### **12.1.1 Transit Travel is More Environmentally Friendly Than Automobile Travel**

With the current load factors that are achieved on Canadian transit systems (typically 40% or more on average in larger urban areas and much higher during peak hours), transit is far more efficient in terms of greenhouse gas emissions per passenger-kilometre than automobile travel. On average, it is estimated that one passenger-kilometre travelled on transit produces 79 grams of CO<sub>2</sub> (GHG equivalents) whereas one person-kilometre travelled by urban automobile produces 254 grams, or more than 3 times as much.

#### **12.1.2 Transit Mode Shares are Declining**

Over the last four decades, the amount of travel made by private automobiles has increased dramatically. At the same time, the amount of travel by public transit has more or less remained constant (increases during the 1970's and early 1980's, reducing since then) resulting in a significant decline in transit's share of trips. Currently, about 80% of all Canadians who travel to work do so using the private automobile. Of the remainder of these individuals, about 10% use transit and 10% walk or cycle.

One of the primary reasons why transit is used so little and why auto mode shares are increasing, is pricing. Since about 1986, the price of transit fares have risen while the costs of owning and operating an automobile have remained relatively constant. There is a fear on the part of transit agencies that if transit fares are increased further the existing base of "choice" transit riders, people who could use other modes, will be eroded away.

#### **12.1.3 Significant Changes in Transit Usage Are Required**

It is estimated that urban transit currently accounts for about 10% of all commuter trips in Canada and 5% of all urban passenger activity in Canada. Significant changes in transit use and mode share will therefore be required to have a measurable impact on auto use. Based on current modal share data for all commuter trips in Canada, nearly a 50% increase in transit use would be required to reduce auto travel by 6%.

Transit systems in Canada report that they have a high level of turnover of passengers. It is therefore necessary for them to develop measures to retain existing riders as well as to attract new riders.

#### **12.1.4 Transit-Benefits Programs Are Rapidly Growing in the U.S.**

The United States has, for some time, had various forms of tax-free Federal commuter benefits. Employer-provided parking in the United States is not considered a taxable benefit and as a result, efforts were necessary to ensure a level playing field between auto and transit.

As of June 1998, with the introduction of the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) both employers and employees are allowed significant tax-free transit benefits. The commuter choice provisions of the TEA-21 allow employers to let their employees allocate up to \$65 per month (\$780/yr)

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of their salary before taxes to pay for transit and vanpool parking. As a result, employees are not charged tax on this proportion of their income. Employers can also exclude qualified transportation benefits from the gross income of employees, thereby saving on payroll taxes. In fact, the employer and the employee can share the cost, both out of tax-free money, of the benefit up to the monthly maximum. Under TEA-21, the maximum tax-free allowance will rise to \$100 per month after 2001.

### 12.1.5 Most Commuter Parking in Canada is Free

The 1996 Transportation Tomorrow Survey conducted in the Greater Toronto Area (GTA) provides an indication of how many commuters receive free parking. For the entire GTA, nearly 80% of all commuters did not pay for parking at their place of work. Evidence from other areas confirms this.

The treatment of employer provided transit benefits contrasts with that of parking. Although parking provided by employers is theoretically supposed to be a taxable benefit, it is difficult to enforce this. While no conclusions can be made on income tax revenue collection on parking provided to employees, there is reason to believe that the percentage of commuters paying taxes on parking benefits is quite small. Therefore, the fact that most or many auto commuters are receiving free parking which is not taxed while any transit benefits are taxed suggests that there are inequities.

### 12.1.6 Alternative Scenarios

To test various possible arrangements, four Scenarios were developed for analysis in this study:

Scenario	Description
<b>Basic Scenario</b>	<ul style="list-style-type: none"> <li>• Tax exemption for employer-provided transit pass, with and without a cap</li> <li>• No special marketing</li> </ul>
<b>Marketing Based Scenario</b>	<ul style="list-style-type: none"> <li>• Adds proactive marketing programs by transit agencies to the tax-exempt employer-provided transit benefit</li> </ul>
<b>Flexible Benefit Scenario</b>	<ul style="list-style-type: none"> <li>• Adds the option of pre-tax purchase of transit fares, passes or vouchers by employee, or combination of employer and employee benefits to provide greater flexibility, incentive to participate, and equity</li> <li>• for evaluation purposes have assumed that costs are shared 50/50 between employers and employees</li> </ul>
<b>Extended Mode Scenario</b>	<ul style="list-style-type: none"> <li>• Extends tax benefit coverage to van-pools</li> <li>• Adds tax exemption for paid monthly parking at facilities operated by transit agencies</li> </ul>

These scenarios were designed to cover the range of possible impacts of a tax free transit benefits program.

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Based on the results of this study, and on recent U.S. experience, it is concluded that more employers are likely to offer benefits to employees under a flexible benefits program where the employee can request a reduction in taxable salary and use before-tax income for the purchase of transit fares.

### **12.1.7 Transit Ridership Increases of up to 60% Among Recipients Are Possible**

Given a lack of real experience, estimating the impacts of a tax free transit benefits program was based on judgement in the context of experience elsewhere. Early experience in the United States with low caps on monthly transit benefits (\$21/month) suggests that among those employees who accept transit benefits, transit ridership could increase by 25%. In the now well quoted 1993 GAO study of U.S. Federal participation in transit benefits programs, one out of four of the employees who accepted benefits was a new transit user.

Based on the approach adopted for this study, which takes into account both geographic differences and differences in auto and transit commuter characteristics and assumes higher benefit levels, it was estimated that transit ridership could increase by between 37% and 58% for employees in participating workplaces, depending on the type benefits offered and marketing initiatives undertaken. After accounting for the fact that not all employers would necessarily participate in the program, the increases in transit commuting ridership would range from 11% to 35%. The corresponding reductions in automobile use would range from 2.4% to 7.5%.

### **12.1.8 GHG Emissions From Commuter Travel Could be Reduced by 4%**

Based on the assumptions outlined in this study, it is estimated that a Basic Scenario transit benefits program could reduce total GHG emissions by commuters in cities with public transit by 1.6% from the baseline in 2010. Allowing the Flexible Benefits Scenario would increase this reduction to 2.1% and extending benefits to vanpools (the Extended Mode Scenario) would result in a 4.8% reduction. By the year 2010, the absolute GHG reductions in CO<sub>2</sub> equivalents would range from 102,000 tonnes for the Basic Scenario to 314,000 tonnes for the Extended Mode Scenario.

These emissions reductions are for commuter trips in cities with transit only. The extended mode scenario saves 4.8% of the CO<sub>2</sub> emitted by commuter trips in these cities. When compared to total urban passenger travel the percentage reductions is lower. On the other hand, they are based on possible changes in commuting trips alone; they do not take into account possible changes in non-work trip mode choice.

By itself this means that, a tax exempt transit benefit program would not be the single answer to meet the Kyoto commitment which may require a reduction of several megatonnes from urban transportation alone, depending on how the reductions are allocated between sectors. The program, would however, reinforce and increase the impacts of other similar GHG emissions reduction strategies and, together, the impacts could be significant.

### **12.1.9 The Flexible Benefits Scenario Appears to be Realistic**

This scenario assumes that employers and employees would each pay half of the cost of the transit benefits program but that all of it will be tax-free to the employee. It appears to the authors of this report to be a realistic assumption. The Extended Mode Scenario makes a similar assumption but assumes that such a program could immediately be extended to paratransit modes such as vanpools. Because of this we believe that the Flexible Benefits Scenario is one that might be recommended for immediate implementation and have used it in providing information to be compared with other measures for reducing GHG emissions.

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### **12.1.10 Tax Free Transit Benefits Would Have Positive Economic Impacts**

Introducing a tax-free transit benefits program would have different impacts for different stakeholders. Governments, both Provincial and Federal, would experience reduced tax revenues. Employees would ultimately benefit under all scenarios as a result of the tax free transit benefits. Depending on the scenario, employers stand to lose some money as a result of providing a benefit to employees, but these costs would be covered partially through reduced parking costs, or through cost sharing with employees. Transit agencies would benefit from increased fare ridership and fare revenues, but this would be offset by the possible need to increase service levels. Where load factors are presently below capacity, as is the case in some Canadian cities, no increase in costs would be incurred, but in other cities (and in other locations within the same cities), there would have to be some increase in the service provided to handle additional riders.

Based on the estimates presented in this study, the total reduction in tax revenues to the Federal and Provincial Governments in the first year of implementation would amount to \$9 - 12 million per year for the Basic Scenario and \$35 million for the Extended Mode Scenario. These tax revenue reductions would increase to \$77 - \$96 million and \$135 million for the Basic and Extended mode scenarios respectively in 2010; for the Flexible Benefits Scenario, the loss to finance departments would be between \$145 million and \$152 million in 2010.

Taking into account the revenue losses to governments only, the program would cost between \$430 and \$950 per tonne of CO<sub>2</sub> reduced in 2010, depending on the scenario considered; for the Flexible Benefits Scenario the estimated costs per tonne of CO<sub>2</sub> reduced in 2010 is between \$770 and \$810. This, of course, is not a true cost but a transfer from governments to transit users.

In terms of real resource costs paid by society, a tax-free transit benefits program would result in significant savings. This is primarily a result of the fact that it is more cost-efficient to move people in cities by public transit than by private automobile. The primary cost savings to society would be through reduced parking costs, reduced road infrastructure costs and reduced congestion costs. Taking into account the offsetting increases in transit costs and savings in personal travel costs and in employee provided parking, the net savings in real costs are estimated to be in the order of \$2,900 per tonne of CO<sub>2</sub> reduced. While this estimate is dependent on the assumptions made regarding the costs of the automobile to society, the important fact is that there would be positive benefits to society in addition to the reductions in GHG emissions. This study has not considered the cost impacts of reductions in ground level pollution, which would produce further cost savings to society due to reduced health impacts.

### **12.1.11 Benefits are Directly Related to Performance**

A key aspect of the tax-free transit benefits initiative is that the cost and benefits are directly tied to the number of people who choose to participate in the program. Unlike some other measures to reduce greenhouse gas emissions, there are no up front costs (besides marginal administration fees) that are required before results are achieved. Transit agencies in particular have a stake in ensuring that the program is successful, otherwise they have nothing to gain. In this respect, the transit benefits initiative is superior to a program that would simply increase funding for transit or reduce fares for passengers.

## **12.2 IMPLEMENTATION ISSUES**

Changes to the Income Tax Act would be required to enable the Tax-Exempt Employer-Provided Transit Benefit to be implemented.

The greatest increase in modal shift from personal vehicles to public transit would occur if:

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- legislative changes give employers and employees flexibility in purchasing fare media and in sharing tax benefits from the program;
- the federal tax-exemption is accompanied by aggressive marketing programs by the public transit industry targeted at both employers and employees;
- legislation allows access to tax free benefits in many market segments, where public transit exists;
- legislation and regulation ensure simplicity in program administration for employers.

Programs based on purchase of monthly transit passes by employers in the U.S. have not been successful because they lack flexibility and put a heavy administration burden on employers.

Vouchers in various denominations, purchased tax free by employers and used by employees to purchase transit fares on any transit system within an urban region appear to provide the desired flexibility and simplicity.

Transit benefits can be delivered through:

- transit agencies in cities served by one operator;
- public or private commuter services agencies established for the purpose in urban regions served by multiple transit operators, or
- a national public or private commuter services agency serving employers nationwide.

In summary, providing tax exempt status for employer-provided transit benefits is a cost-effective means of reducing GHG emissions from transportation in Canada's urban areas served by transit. Real GHG reductions are achievable if this initiative is taken alone and it would work synergistically with others if part of a combined package of initiatives. While the federal and provincial governments would experience a reduction in income tax revenues, these represent a transfer to transit riders and the net cost to directly-affected stakeholders would be zero while there would be significant savings in resource costs to society.