

**An Examination of the Theory and Practicality of Alternative and Realistic  
Funding Sources for Transportation, with an Emphasis on Transit and Other  
Sustainable Modes**

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**Paper prepared for the presentation at the Best Practices in Transportation  
Planning Session**

**of the 2012 Conference of the Transportation Association of Canada,  
Fredericton, New Brunswick**

**Abstract:** Municipalities across North America are struggling to find immediate and longer term mechanisms to fund the growing operational and capital costs of transportation infrastructure and programs. This is especially true for sustainable transportation modes such as public transit, cycling and walking. This is happening at the same time that provincial/state and federal governments are implementing reductions to transportation funding programs due to pressures to increase funding for other programs and to reduce overall government spending. In addition, North America transit systems are experiencing the following changes that are impacting their financial situations:

- Negative customer reactions to continually raising transit fares;
- The increasing use of more fuel efficient automobiles, resulting in reduced revenues from sources such as gasoline taxes;
- An increasing resistance to raising more revenues from local property taxes ; and
- A weakening economy that lowers revenue from sources such as retail sales taxes.

As well, there is a significant growth in demand for increased and alternative funding sources for transit and other sustainable transportation modes to:

-Reduce greenhouse gas emissions by enhancing the quality, reliability and inter-connectedness of active transportation modes that in turn increase their use;

- Minimize the impact on low-income households of increasing transportation funding from existing sources, as many of them are regressive;

- Address the increasing need to reduce congestion for improved goods movement;

-Enhance the liveability of urban areas in terms of the quality of the overall transportation system, as this is a key factor in the economic competitiveness of urban areas;

- Address the increasing costs of operating, maintaining and constructing transportation systems such as Bus Rapid Transit (BRT), Light Rail Transit (LRT), commuter rail, and high frequency bus systems with good walking and cycling connections and facilities, which are being introduced and expanded to attract a greater number of users, especially “choice travelers” who own an automobile; and

- Meet the growing needs and costs to maintain and replace aging transportation infrastructure, and improve its security.

This paper will examine the economic theory and other key reasons supporting taxes, user fees and other funding sources to support the enhancement and expansion of transportation infrastructure and also meet capital and operating costs, with an emphasis on the funding of sustainable modes including transit, walking and cycling. It will consider such evaluation factors as revenue generating potential, financial stability, and income and geographical equity, along with the externalities of the funding mechanisms. Negative externalities include air and noise pollution, congestion, traffic accidents and property damage, while increased land values, greater economic competitiveness and more free time are examples of positive externalities.

The paper will also consider the appropriateness of the funding sources in terms of the added benefits transportation demand management (TDM) measures, and the practicality/ease and costs of collecting/administering the transportation funding sources. The focus will be on examining packages of funding sources that are efficient, offer some degree of equity, are financially sustainable, and in themselves may have a TDM impact.

The paper will examine some of the key political, social, administrative and other barriers to implementing these transportation-related and sustainable funding sources, along with strategies to obtain support for implementing these funding sources.

The methodology includes a review of documents and case studies pertaining to the analysis of and implementation of alternative transportation funding sources in North America and globally. In addition, some interviews have been conducted with key personnel in regional transportation authorities that have researched, developed, implemented and/or monitored these transportation funding sources.

## 1.0 Introduction

### The Need for Greater Funding

A 2010 study undertaken by the Canadian Urban Transit Association (CUTA) identified that Canadian transit systems require roughly \$53.5 billion of infrastructure expansion in the next five years. This investment is needed to:

- Address the growing transit ridership in many municipalities resulting from population and employment growth, along with land and financial restrictions on expanding road capacity;
- Meet municipal transit mode share targets established in transportation plan policies to achieve related benefits: improved economic prospects, reduced greenhouse gas emissions, enhanced mobility, and lower road infrastructure costs (i.e. these first two need a total of \$40.7 billion); and
- Rehabilitate and renew infrastructure and facilities (i.e. totalling \$12.8 billion). (1)

It should also be noted that these investment figures do not include the necessary costs of replacing or renewing transit infrastructure that already exists. A 2006 CUTA analysis also found that the optimal level of transit across Canada to address ridership needs would increase net operating costs (i.e. total operating costs less fare revenues) by almost 130%, from \$1.8 billion to \$4.1 billion. Over 30 years, these additional costs would have a total present value of about \$49 billion. (2)

To respond to these financial needs, in addition to traditional sources of funding for transit systems in North America (e.g. fares, retail sales taxes, property taxes, and gasoline taxes), municipalities, regional transportation agencies (e.g. Metrolinx, TransLink), state and provincial governments and federal governments are pursuing and evaluating many other forms of capital and operational transportation funding. As well, traditional sources such as revenues from gasoline taxes are in many cases declining due to the widespread introduction of more fuel-efficient vehicles along with lower overall vehicle usage.

An example of the seriousness of this situation is demonstrated by a quote from *Paving Our Way*, a 2009 report from the National Surface Transportation Infrastructure Financing Commission which stated that in regard to the United States' transportation networks, including transit and roads:

**“The nation faces a crisis. Our transportation system has deteriorated to such a degree that our safety, economic competitiveness, and quality of life are at risk.” (3)**

Traffic congestion in the metropolitan areas in Canada as well as in US metropolitan areas is endemic. For example, in the United States the cost of congestion, including lost time, wasted fuel and vehicle wear and tear, is estimated to top \$78 billion annually for its 437 urban areas. As well, transit ridership has surged in the US so that many transit systems are operating near or beyond their physical capacity, while in many rural areas the service quality and coverage that is required is unable to be provided.(4)

A 2006 Transport Canada study put the cost of congestion nationwide, taking everyday and “non-recurring” congestion (accidents, road work and so on) together, at as much as \$6.7 billion. More than 90 % of this cost represents the value of the time lost to auto travellers (drivers and their passengers) in congestion. The remainder represents the value of fuel consumed (around 7 %) and GHG's emitted under congestion conditions (around 3 %). The study estimates an increase of 1.2 to 1.4 megatonnes of GHGs every year due to congestion. Yet even this is almost certainly an underestimate. The dollar figures are measured in 2000 dollars, for starters, and traffic has appreciably worsened since the early years of the decade when the study was conducted. As well, costs were estimated only in the nine largest urban areas at rush hour, and only for cars (not trucks or buses) (5).

A more comprehensive estimate, conducted in 2008 for Metrolinx, the agency responsible for transportation in the Greater Toronto Area, put the annual cost of the congested state of the region's roads at \$6 billion, when knock-on costs to the surrounding economy are included. That suggests annual congestion costs for the country as a whole in 2031 would approach \$15 billion. (6)

## The Economic Theory Supporting Transportation Funding

Transportation economic theory tells us that investment in transportation networks consisting of roads, parking spaces, public transit systems and connecting walkways and cycleways, provide numerous benefits to their users. These benefits include enhanced mobility, time savings etc., while negative externalities mostly from automobiles include local air, light and noise pollution, accidents and property damage, and community severance and congestion.

However, overall, our transportation systems are underpriced. All too often the prices paid by transportation system users (i.e. auto and transit modes) are markedly less than the costs of providing the transportation services, and are even more dramatic when the negative externalities mentioned above are included. As a result, basic economy theory tells us, when something is valuable - in this case the roadway right-of-way space - and when it is provided for less than its true cost, capacity shortages are generated in our road system and they are manifested as congestion.

For transit systems in the US and in some larger Canadian metropolitan areas (e.g. Vancouver), the predominant financing systems are indirect (e.g. property taxes, retail sales tax, gasoline taxes), providing users with weak signals on how to use the transportation systems in the most efficient way. This results from three key variables: system users are typically unaware of how much they pay in fuel taxes (as distinct from the price of gasoline), as daily swings in price mask the tax component and blunt its effect on demand; fuel taxes and other direct and indirect user fees currently account for less than 60 percent of total system revenue (federal, state, and local in US), so that users bear only a small portion of the real costs of their travel; and fuel taxes have no direct link to the specific parts of the system being used or heaviest usage times and thus cannot be used to change travel choices.(7)

## Key Barriers to Obtaining Enhanced Alternate Mode Funding and the Means to Overcome- Lessons from Regional Transportation Authorities

Interviews were held with Auckland Transport Authority and other senior administrative personnel and political directors of multi-modal regional transportation organizations such as TransLink, Metrolinx, and the San Francisco Metropolitan Transportation Commission. Many of these organizations have implemented or are seriously examining alternative forms of financing transportation operations and investments. These organizations unanimously indicated that multiple forms of transportation financing, including those funding sources that most directly influenced individual transportation behaviour with a transportation demand management (TDM) effect, should be pursued for the following reasons:

- Not all benefits of an efficient transportation system go to vehicle users. The non-driving public also benefits. Therefore financing means should include both transportation users as well as the general public; and
- Having multiple sources of funding provides protection in case one or more sources of funding are adversely impacted by the economy or other factors. For example, sales tax revenue, which is a prime source of operating funds of many US transit systems, dropped precipitously during the recent 2008-2010 economy recession, and transit services had to be reduced almost instantly.

The senior staff interviewed also provided excellent advice on the key actions required to develop and obtain acceptance and successfully implement future funding sources for transportation operations and capital investments. These are summarized into six areas, all of which can help to overcome formidable barriers in the implementation stage:

**i) Ensure Efficient and Effective Operations and Capital Investments Now** - Before asking for new sources of funding from the public, ensure that your transportation operations and capital investments are as efficient and effective as they can be. This will assist to gain public credibility and support. If politicians, stakeholders and/or the public think that a transportation organization is being as efficient and effective as they could be, there will be considerable pushback to expanding existing or implementing new financing sources. This, to some degree is happening in Metro Vancouver with TransLink's recent and third public request in its thirteen year history for additional funding sources. These sources include a 12% fare increase and other financing means (e.g. a regional

carbon tax added to the existing provincial carbon tax and a new vehicle levy). However, some local politicians, stakeholder groups and the general public are questioning whether TransLink is operating as efficiently as it should be. (8 and 9) This is one of the reasons that the Premier of BC has recently directed that a comprehensive audit be completed of TransLink, to see if efficiencies and cost savings can be found. This audit is linked to a letter written by the Metro Vancouver Mayors to the BC Minister of Transportation requesting provincial legislation to enable other sources of funding to be used for transit (e.g. regional carbon tax and motor vehicle levy based up on the weight, fuel performance and emissions of vehicles). (10)

**ii) Conduct A Broad Dialogue and Stakeholder/Public Outreach Program Before Asking for New or Enhanced Funding-**

A full and broad stakeholder and public dialogue and consultation/communication effort is required to truly engage all key stakeholders and the general public in terms of the objectives that should be achieved with the transportation network including transit and alternative modes. This includes an extensive dialogue on what specific projects and funding sources are required in the short and long term. This can be combined with updating regional and local transportation and land use master plans. Specifically, this consultation/communication program should involve the following steps:

- Develop a consensus on the scope of transportation and transit needs through policies and plans;
- Develop a specific program of transportation investments for which additional funding is required and a credible demonstration of the benefits expected; and a campaign plan for obtaining the new funding sources, including roles and responsibility of individuals;
- Describe the revenue sources to be pursued and enacted and the rationale for their selection;
- Determine who at the local, regional and state/provincial level must advance the funding campaign; and
- Design and carry out a comprehensive public education and advocacy campaign for the new funding and other initiatives with a reasonable timeline for action. (11)

**iii) Need to Establish Clear Linkages between Enhanced or New Funding Sources and Transportation Projects For Which Additional Funding Is Being Used-**

It is important for political, public and stakeholder support of financing sources to establish clear linkages between the funds being collected from specific funding sources (i.e. specific pots of funds) and how they are to be used effectively and efficiently to improve the transportation system in specific geographic locations.

**iv) Need Assistance Where There are No Regional Transportation Organizations to Push for New Funding Sources:**

When there are no regional transportation authorities to negotiate and push provincial governments for the legislative authority for developing new sustainable transportation funding sources, there is a need for local governments in other regions to work together to conduct the stakeholder/public consultation and higher level government lobbying and working with national organizations such as the Canadian Urban Transit Association (CUTA), the Transportation Association of Canada (TAC), and the country's regional transportation authorities.

**v) Need for Diverse Set of Area for Funding for Transit and Alternative Mode Investments:** To protect regional and municipal transportation agencies from potential shortfalls in funding from sudden drops in the total and the stability of revenue from one source (e.g. gas tax, sales tax) ideally they should pursue diverse sources of funding. For example the Regional Transportation Commission in Las Vegas, Nevada which is the regional transit and highway agency, draws on the following diverse sources of funding; a county gas tax; a hotel/motel room tax; as development tax on residential and commercial property; a motor vehicle privilege tax; a jet fuel tax, and a 0.25% sales tax dedicated to public transit service (12)

**vi) Need for Both Local, Regional and Provincial/State Champions for Enhanced and Expanded Funding for Transit and Alternative Modes-**There must absolutely be strong local, regional and provincial/state champions, working together who will support legislative changes (if required) or other actions to obtain expanded transit and alternative mode funding. (13)

In general, the public in the United States and other countries such as Sweden have been receptive to new transportation operating revenue and capital project tools (i.e. road and bridge tolls, retail sales tax, congestion taxes, bonds) particularly when there has been a clear link between the money raised through the revenue tool and improved mobility, quality of life and new infrastructure provision. For example, in the 2008 US election, there were 32 referendums across the country asking voters to approve various revenue tools to enable new transit construction. Three-quarters of these measures were approved, often receiving over two-thirds of the voters' support. Significantly, 67 % of voters in Los Angeles County approved a sales tax increase that will go toward mass transit expansion, including subway construction. Similarly, after experiencing the improved effects on their mobility, voters in Stockholm voted overwhelmingly to keep a congestion pricing scheme in place following a trial period in 2006. (14)

## 2.0 Criteria for Evaluating Funding and Financing Options for Alternative Transportation Modes

The funding options were evaluated according to the following criteria, which have the following definitions.

**Table 1-Criteria for Evaluating Funding and Financing Options**

FUNDING CRITERIA	EXPLANATION
<b>Transparency</b>	The degree of connection between revenue source and transit service: those paying should know how much they are paying and what it is they are paying for. As well there should be some fairness: the amount paid by individuals or groups should, to some degree, reflect their ability to pay, balanced with the benefit received for the service funding by tax or charge.
<b>Revenue Generating Potential and Financial Stability</b>	<p><b>Revenue Generating:</b> The absolute dollar amount or potential yield of funding source that can be generated using political and economically variable rates to meet transportation investment needs over a specific time period. The yield depends on the level of the proposed tax or fee, but is constrained by several factors, including the size of the entity being taxed and number of entities being taxed. <b>Financial Stability:</b> The ability of the funding mechanism to generate revenue growth consistently over the long-term, and the extent to which the mechanism adjusts or can be adjusted easily by system operators or policy makers from year to year in order to meet needs, including but not limited to adjusting for inflation.</p> <p>This evaluation factor also includes the <i>relative scalability</i>, or the extent to which the mechanism can be scaled upward or downward to meet specific funding demands or at specific levels of government; <i>stability</i>, or the extent to which the mechanism provides a stable source of funding without significant deviation, for instance based on economic downturns or changes in travel behavior; and <i>predictability</i>, meaning that to the extent there may be variations in revenue generation, they are predictable and manageable, such as those created by seasonal variations.(15)</p>
Ease and Cost of Implementation and Compliance, and Administration Efficiency	<p><b>Ease and Cost of Implementation and Compliance:</b> This criterion focuses on the initial degree of difficulty for the implementation of a new mechanism (i.e. the ability to implement quickly, considering regulatory environment, logistical requirements, and stakeholder organizations, etc.) and its related start-up costs and ongoing cost of administration and monitoring for compliance. These costs should be considered not only in absolute dollar terms but, more important, in relation to the revenue-generating potential of the mechanism.</p> <p><b>Administrative Efficient:</b> When taxes, fees, and charges are easy to collect, simple to understand, inexpensive to administer-free of bureaucracy, and resistant to fraud and evasion, they are said to be administrative efficient. The easiest fee collection systems are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes; and strategies that require the taxed entity to make a unique payment solely for the purpose of paying the fee or tax are considered less administratively effective. Those that require completely new and untested collection systems (e.g. a tax on vehicle miles traveled) are considered the least administratively effective.</p>
<b>Transportation</b>	<b>TDM Effects-</b> The ability to shift car trips to transit and alternative mode trips and/or reduce

<b>Demand Management (TDM) Effects and Transportation and Economic Efficiency</b>	<p>travel demand. As fees or taxes can influence travel behaviour, revenue sources for transportation ought, where possible, to be structured in ways that encourage efficient use of the transportation system.</p> <p><b>Transportation Efficiency</b>-The funding should cause users and direct beneficiaries to pay for the full costs of using the transportation system to the greatest extent possible (including for impacts such as congestion, air pollution, pavement damage and other direct and indirect impacts) to promote more efficient use of the transportation system.</p> <p><b>Economic Efficiency:</b> The extent that a strategy provides clear pricing signals</p> <ul style="list-style-type: none"> <li>○ Funding strategies with <b>high</b> economic efficiency are those that help make the marginal prices of goods and services reflect their true costs</li> <li>○ Funding strategies with <b>low</b> economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund</li> </ul>
<b>Technical Feasibility</b>	<p>The ability to implement with little physical infrastructure / technological equipment required.</p>
<b>Popularity/Political Acceptability and Legal Viability</b>	<p><b>Popularity Political Acceptability:</b> The relative feasibility of gaining public and political acceptance of the funding mechanism compared with other mechanisms. This is a <b>make-or-break criterion</b>, since a revenue mechanism must of course be accepted before it can be implemented. Political viability, however, can change over time—what was once considered taboo can become quite acceptable after some change in circumstances, including appropriate public education and consultation /communication efforts. Technological advances, such as electronic tolling or smart cards on transit systems, that can ease the burden on the payer by reducing or eliminating the delay or other hassles associated with paying the charge also have improved public acceptance of certain mechanisms.</p> <p><b>Legal Viability:</b> This considers a specific mechanism’s viability in the context of current law and what is required to make implementation legally feasible. This is particularly important when a mechanism is being considered by one level of government but requires legal authorization from another level, such as when a local government requires authorization from the province or state to impose a new tax or user charge.</p>
<b>Equity-Geographic and Income</b>	<p>This considers the extent to which a funding source (tax or fee) equitably burdens different groups of people. Equity considerations may be <b>Geographic</b> (e.g. the extent to which citizens living in different parts of an urban area must pay for the transit system); <b>Income-related</b> (e.g. the extent to which the tax or fee burdens different income groups); and <b>User group-related</b> (e.g. the extent to which the tax or fee burdens transit users versus non transit users).</p> <p><b>Equity Across Income Groups</b>—This refers to the relative burden placed on individuals across the economic spectrum and considers individuals’ ability to pay. Consideration of income equity generally discourages the use of regressive funding structures (those that place a disproportionate burden on lower-income groups) and toward more progressive forms.</p> <p><b>Geographic Equity</b>—This refers to the extent to which the cost allocation/impact of the mechanism can be structured to match the geographic distribution of the benefit of the funded investments.. There will be instances where some amount of cross-subsidization may be required and appropriate to ensure important and necessary system improvements in places that are geographically disadvantaged in terms of population density, for instance. Examples include areas where people must drive long distances to conduct normal daily activities and areas with relatively small population bases supporting daily activities. (16)</p>

Note: There is often some degree of overall conflict between the criteria used to evaluate alternative funding mechanisms. For example, the need for public support when a region is contemplating a new revenue mechanism may create friction between a transportation funding option which creates a TDM effect and other attractive attributes, such as equity or efficiency. For example a 10 % motor fuel tax increase and a quarter % increase in retail sales tax could potentially be expected to yield the same amount of funds in a region. As a user fee, the fuel tax will be more efficient and

more equitable, because it links to some degree the use of the transportation system to funding, and those who use the system more will pay more. However, in the public's view, a one-quarter cent retail sales tax may seem much smaller than a 10-cent tax and thus more politically acceptable. Local officials may choose to support the sales tax, even though some residents would pay more than they would under the 10 % fuel tax and even though the tax is unrelated to transportation system usage.

### 3.0 Funding and Financing Options for Alternative Transportation Modes and Benefits and Disadvantages of Each Option

The funding options are outlined in the following pages and key general benefits and disadvantages of each option are summarized along with existing examples.

#### a) Increase Funding Sources Related to Transit Mode

**Raise Fares and Revenue/Cost (R/C) Ratio or Full Cost Recovery** - Many North American transit systems operate with R/C ratios in the 30% to 50% range, with relatively low fare levels maintained to encourage ridership and not place a high burden on lower income residents using transit services. One could argue that this should not be an objective of transit fare policies, but usually it is desired by municipal councils. These fares levels could be increased to cover a higher portion of operating costs or to obtain full cost recovery (i.e. 100 % R/C ratio). Full cost recovery can mean that the fares cover either just operating expenses (i.e. personnel, fuel administration) or it can mean covering *both* operating costs and capital expenses.

##### Benefits

- Allows for some other funding sources to be devoted to capital expansion
- Transit system users fully cover the cost of this public resource
- Ensures that the public understands true cost of providing transit service

##### Disadvantages

- In most cases requires significant increases in transit fares, which are shown to result in lower ridership levels (i.e. typically elasticity factor of -0.4 %, equating to a 4% decrease in ridership expected for every 10% increase in fares)
- May discourage people from using transit due to cost compared to other alternatives such as the automobile, whose drivers do not pay the full costs of the road networks used. This is especially true for trips involving groups, such as families
- Social equity concerns - could price transit out of reach of lower-income persons
- Essentially no North American or European transit systems operate in this manner – the Toronto Transit Commission and GO Transit recover 82% and 90% of their operating costs from fares, respectively.

##### Who Uses This Option

**Hong Kong:** The MTR is the central core of the Hong Kong transit system, with 150 stations and 211 kilometres of subway and rail. This service full cost recovery from the farebox benefits from Hong Kong's population density and its profits from station area land development.

**Tokyo, Japan:** The Tokyo subway ranks first in worldwide subway usage, with 14 lines, 282 stations, a system length of almost 330 kilometres and eight to nine million daily passengers. With such volume, the system is able to be fully financed from the fare box, even with relatively affordable fares.

**Osaka (Hankyu Railway and Singapore(SMRT))** –Over 100 R/C ratio as well due to ridership levels and density of land use along services. (17)

**Increase Revenues from Advertising**- Most transit systems raise a small percentage of their operating costs from advertising and the increased revenue opportunities will be limited for most transit systems. A common source of



revenue for transit providers is income from advertisements placed on vehicles, facilities and transit related materials such as schedules and maps. These revenues; however, are generally modest, accounting for anywhere between 0.1 and 3.0% of total operating income. (18)

**Implement New Transit Fare Passes (U-Pass, Community Pass)**- The introduction of Universal Passes (U-passes) or Community Passes (i.e. discount passes structured for specific communities or districts in urban areas such as the sustainable community at Simon Fraser University known as UniverCity) have been implemented for many transit systems in North America . While these passes have generated both increased peak and especially off-peak ridership in most cases, this has been generally done at a high cost since significant amounts of new service have to usually be added in peak periods. This has significantly increased service costs for the host transit systems, while revenues have been relatively fixed, with little or no increase in the limited ability of the transit system to pass all of these increased costs on to students by raising the U-Pass costs in kind. (19)

**Obtain Increased Federal and Provincial/State Grants**- Upper levels of government throughout North America are facing increased demands and costs for medical, educational, and seniors benefits with an aging population, and the need for enhanced educational systems to be more economically competitive. At the same time, there have been significant pressures to reduce government spending, and this has resulted recently in large decreases in funding for transit and alternative mode programs, especially in United States. Therefore, the desire of both Canadian and US municipalities to obtain increased funds for transit and alternative modes of transportation may be very difficult to obtain in the short and long term. One example in Canada is the desire of municipalities across Canada to encourage the federal government to introduce a National Transit Strategy with long-term, dedicated funding.

**Use New Fare Collection Technology--Fare Gates with Rapid Transit Systems, Smart Cards, Debit Cards etc. -** These new means for customer fare payment have the potential to increase revenues from existing customers through easier fare payment (i.e. debit cards), reduce fare fraud (i.e. less fare evasion with fare gates on rapid transit systems), or increase ridership and revenues - (i.e. especially Smart Cards) with the convenience and flexibility they provide for customers. Examples include the current introduction of fare gates in rapid transit stations by TransLink in Metro Vancouver, and the introduction of Smart Cards such as TransLink's Compass and Metro Toronto Metrolinx's Presto.

## **b) Funding Sources Related to Land Development**

**Raise Property Taxes**- Property taxes are assessed on the value of land and buildings and are the principal source of revenue for most local governments, as well as the key funding source for a large share of the operating costs of many transit systems in North America. The taxes are only somewhat related to the benefits provided by transit services to the owners of properties (i.e. both users of the transportation system and non-users benefit through reductions in greenhouse gases, congestion, noise pollution etc.). However, in many cases the ability for property taxes to be increased in municipalities is limited by the other funding demands placed on property taxes (e.g. education, social services, waste management etc.).

**Implement or Increase Transit Development Levies** – Development taxes are similar to property taxes in that they assess property developers for the access to their property that the transportation system provides. Developers are not charged for direct use of the road network but rather for the benefits conferred on their property by the road network (i.e. these fees are assessed only on new developments). In some cases, the taxes may be “exactions” that are used to pay for roads and other infrastructure that support the development, if these are not already in place. In some municipalities, transit service capital costs induced by new development can be subject to be contributed to by development interests (e.g. City of Calgary). Residential development taxes are unlikely to be a sufficient or effective source of revenue unless significant new homebuilding is expected. Commercial development taxes may yield greater revenues, as commercial properties typically enjoy higher values. Unfortunately, both taxes may be unstable, as residential and commercial

development activity will ebb and flow with broader economic cycles. They may also produce inequity within a community; when developers pass these fees through to homebuyers, it may result in far higher prices for new than existing homes, even if they are otherwise similar.

**Implement Value Capture or Land Enhancement Taxes on Development Near Transit Stations-BRT, Rapid Transit and Commuter Rail**-Very often the value of property within 500 to 800 metres of rapid transit stations is increased in value for potential residential, office and retail/commercial development by the enhanced accessibility and lowered overall transportation costs created by the building/operation of a new transit service (i.e. especially higher order transit services such as BRT, rapid transit or commuter rail) and some of this value may be captured by a special “value capture” tax. Proximity to transit tends to be particularly important for: retail businesses that serve transit riders; employment centers that attract many commuters, such as offices, medical centers and educational facilities; and recreational and entertainment activities that attract large crowds; and residential development which offers this improved accessibility, especially for residents who cannot drive, or prefer to use alternatives. Funds also can also be captured by transit systems in these areas by leasing or selling lands or air rights above stations that they own.

#### **Benefits**

- Can discourage land speculation and provide a strong incentive to develop brownfield sites and abandoned property
- Encourages efficient land use and the intensification of existing land uses
- Relatively easy to implement
- Revenue directly tied to benefit from infrastructure built

#### **Disadvantages**

- Designated land needs to be properly zoned for density targets before implementing this tool or else over-taxation will occur
- Can be difficult to determine the exact land value enhancement certain transportation improvements may create and the appropriate tax rate
- Costs imposed on developers are generally passed through to purchasers or tenants, raising housing prices and commercial and retail rents.

#### **Who Uses This Option**

**Hong Kong:** The Mass Transit Railway Corporation (MTR) receives development rights for land above and adjacent to stations. By trading in the purchase price of development rights to land near stations “before expansion” and then trading the rights to developers at “after expansion” prices, the MTR is able to capture the value increase of transit expansion. MTR is completely self-financing through this scheme.

**United States:** Land value capture in the U.S. is most often employed in the form of benefit assessment districts in metropolitan areas like Miami, Florida; Los Angeles, California; and Denver, Colorado.

**Bogota, Colombia:** This program was instituted in 1926 in anticipation of road construction within Bogota. This tool was used to finance the construction of Bogota’s early transportation infrastructure.

**Japan:** To win matching funds for transit expansion from the central government, local governments must raise at least 35 % of construction costs. Land value capture, through a variety of measures, is the most often used means to raise these funds. (20)

### **c. Funding Sources Related To Business and Economic Development**

**Employer Payroll Tax**-A percentage tax is levied for applicable wages and/or self-employment net income earned annually. The transit employer tax is an “employer” tax and cannot be withheld from an employee’s earnings. Every corporation, firm, association of person doing business within an urban boundary is subject to this tax.

#### **Benefits**

- Helps to address the free rider effect by capturing those who use transit service in one jurisdiction (due to employment), but live in another
- Relatively easy to implement

### **Disadvantages**

- Not tied to infrastructure, so may result in the taxation of people who do not benefit from the infrastructure improvements (e.g., employees who telecommute)
- Commuters outside the municipality imposing the tax have no representation over its implementation
- Can provide reasons for businesses to relocate outside the zone of taxation.

### **Who Uses This Option**

**Oregon State:** Administers a payroll tax program for the Tri-Met Transit District in the Portland area and the Lane Transit District in the Eugene area. Tax rates of approximately two-thirds of 1 % are paid by nearly every employer who pays wages in the two districts. Employers are not able to recover these costs from employees.

**Paris, France:** The *versement transport* (a tax on salaries) is levied on employers in the Paris region. The tax is highest in the inner city and lowest in poorer regions. This tax also applies throughout France to varying degrees. (21)

**Implement or Raise Regional Sales Tax:** A special purpose, dedicated sales tax that is applied in a given jurisdiction. The regional sales tax is applied to the rate of the existing sales tax and funds are using dedicated to funding specific capital projects, and /or operating costs. Sales taxes are the most widely used source of dedicated local and regional funding for transit in United States as all but five states have sales tax rates which range from 4% to 7.25 %. (22)

### **Benefits**

- Transparent
- Could be considered more equitable compared to the gas tax since pedestrians, cyclists and public transit users also pay the sales tax
- Can collect revenue from non-residents who use the transportation infrastructure
- Can be dedicated to a specific project
- Easy to implement

### **Disadvantages**

- Not tied to infrastructure use, so may tax many people who do not benefit from the infrastructure
- Regressive tax, since all people pay same rate regardless of their income
- Could push consumers to make certain purchases outside the regional sales tax's area, impacting retailers and causing additional car trips outside the regional sales tax's area
- Sales taxes also do not induce efficient travel decisions; instead, sales taxes represent a subsidy to road users, as there is no direct link between payment of the tax and usage of the transportation system.(23)

### **Who Uses This Option**

**United States:** In 2007 there were seven states that use general sales taxes and a further ten that used specific types of sales taxes (rental car sales taxes) as a source of funding for public transit.

**Denver, CO:** In 2004, Denver introduced a \$4.7-billion regional transportation plan, known as FasTracks. The key funding source for this plan was the imposition of a 0.4 % sales tax.

**Los Angeles County, CA:** In 2008, two-thirds of voters approved a ballot initiative to raise the sales tax by 0.5 % to pay for more road and mass transit projects. It is expected to raise \$40 billion over 30 years.

**Seattle, WA:** In 2008, nearly 60 % of voters approved a ballot initiative aimed at raising \$17.8 billion over 20 years through an increased retail sales tax to fund a transit construction plan. (24)

**Cargo/Container Surcharge-** This is a tax is levied for all containers, varying on size, whether it is full or empty and it is levied on all imported and exported containers the fee is collected at customs for water, air, rail and trucks. This tax is not currently used to fund transportation projects in North America.

## **d. Funding Sources Related to Transportation**

**Vehicle Kilometers Travelled (VKT) Tax or Levy** – This is a form of road pricing that charges drivers directly for each kilometre travelled. In addition to raising revenue through road pricing, the VKT can also asset influencing consumer behaviour (such as when trips are taken) by charging variable rates depending upon the time of day (i.e. higher rates for peak period trips) or influence total travel by charging higher rates in general.

#### **Benefits**

- Directly relates cost of service with service used
- Can discourage unnecessary trips during peak periods and/or divert vehicle trips to non-peak hours
- As the payment directly reflects the amount of travel, the fee promotes efficient use of the transportation system, encouraging people to drive less. Where a VMT fee schedule acknowledges such factors like vehicle weight, emissions and fuel economy, the fee could yield even greater efficiency by making owners of heavier and more polluting vehicles pay their fair share of system costs.

#### **Disadvantages**

- Expensive to implement and maintain, depending on how implemented
- Potential perception of privacy concerns, depending on how implemented (25)

#### **Who Uses This Option**

***Netherlands:*** The Netherlands is introducing a VKT of €0.03 per kilometre, which will replace other road-related taxes such as the 25.5 sales tax on new cars, a vehicle tax based on height and weight, and a fuel tax.

***Oregon:*** In 2006, 300 residents participated in a one-year pilot project where they were charged a fee for the distance traveled, variable by time of day, using GPS technology. The fee was charged when participants refueled — the existing gas tax was deducted from the cost of the fuel and replaced by the VKT fee. From this work a report commissioned by the Oregon state legislature identifies the VMT fee as the principal revenue source under a future finance system that replaces the gas tax. A VMT-based revenue system would need to be implemented gradually, outfitting all new vehicles with the necessary mileage instruments.

***United States:*** The National Surface Transportation Infrastructure Financing Commission was convened to determine how to overcome dwindling revenues from the federal gas tax. One of their main recommendations was the move to a vehicle-miles-travelled fee.

***Germany:*** Since 2005, all trucks have been charged a VKT of €0.09 to €0.14 per kilometer based on the truck's emissions levels and number of axles (26)

#### **Vehicle Registration Fees**

Almost all US states impose annual vehicle registration fees or other related fees. Vehicle registration fees are the second most common source of transported program related revenues at the state level, as more than 50% of the states raise more than a quarter of their dedicated revenues with these mechanisms. The structure of the fee varies in different states. Many impose a simple, flat fee per vehicle registered, while others vary the fee based upon factors such as value, vehicle weight and type and age.

#### **Benefits**

- Allows for dedicated funds for public transit improvements
- When fees can be structured to reflect vehicle weight and/or distances travelled on specific roads, particularly for commercial vehicles and trucks,
- They can better account for actual wear and tear imposed by specific vehicles on the road network

#### **Disadvantages**

- Does not relate to the intensity of the infrastructure use
- If a flat rate is used, social equity becomes an issue

### **Who Uses This Option**

**Metro Vancouver:** TransLink is considering levying a “Transportation Improvement Fee” on vehicles in the short term. TransLink is considering several options for how this fee will be applied. These include a flat fee of \$120 per vehicle or a fee of \$65-\$165 depending on fuel efficiency.

**Canada:** Montreal, Quebec City, Gatineau, Trois-Rivières, Saguenay, Sherbrooke, and Saint-Jérôme all use a vehicle registration fee. In Montreal and Quebec City, \$30 from the provincially-levied license/vehicle registration revenue collected from the area is devoted to funding transit operations.

**United States:** 33 states and 27 local jurisdictions have enacted a vehicle registration fee. The extent to which these revenues are devoted to public transit vary by jurisdiction.

**Gas Taxes-** A tax levied at the retail level for every litre of gasoline sold in general the cost of this tax is charged at the pump and is incorporated into the advertised price for a litre of gasoline. As these taxes are usually not adjusted for inflation, or improvements in vehicle technologies or reduced vehicle miles driven, there can be significant reduction in revenues derived from this source over time. For example, the US federal gas tax has experienced cumulative loss in purchasing power of 33% since 1993 (27).

### **Benefits**

- Consumers are familiar with such a tax
- Transparency
- Ease of administration
- Relatively simple and inexpensive to implement
- Yields significant revenue with a small percentage impact on total motor fuel price
- A user fee (the tax is not paid unless motor fuel is purchased), with an indirect relationship between tax and user benefits/impacts
- Strong history as a dedicated, flexible source of funding that is easy and cost-effective to administer
- Opportunity for increased motor fuel taxes to encourage users to conserve, which has positive effects with respect to environmental, congestion mitigation, and national security goals

### **Disadvantages**

- If used to finance transit expansion, those paying the tax are generally not those using the service?
- As vehicles become more fuel-efficient and hybrid electric vehicles become more commonplace, gas tax revenues are expected to decline significantly
- Sustainability issues: in short term, fixed-rate structure of motor fuel tax leads to reduced purchasing power; in long term, shift to high efficiency and alternative fuel vehicles will reduce motor fuel consumption
- Strong public opposition to motor fuel tax increases (particularly when oil price spikes occur)
- Limited relationship between tax revenues and infrastructure investment, thus does not encourage sound investment practices
- Comparatively regressive tax
- Tax only indirectly related to use—that is, closely related to the amount of use (tax cost per mile) but not to type of facility or time-of-day choices; further,
- Poor proxy for pavement damage costs since there is no weight-based characteristic to the motor fuel tax charge except for poorer fuel efficiency (e.g., for heavy trucks) or for congestion costs
- Adverse geographic equity considerations, since people in rural areas generally travel more.

### **Who Uses This Option**

**United States:** Federally, a gas tax of 18.4 ¢ per gallon on gasoline is collected into the Highway Trust Fund’s highway account, mass transit account and the leaking underground storage tank trust fund. (Highway Trust Fund) U.S. states also frequently levy gas taxes to pay for their infrastructure needs.

**Canada:** The federal government devotes 5 cents of their gas tax proceeds to support community infrastructure.

**Ontario:** Two cents per litre of the provincial gas tax is devoted to funding public transit.

**Metro Vancouver:** The province collects the gas tax and pays out funds to TransLink — over \$267 million in 2007.

(Canada - PDF) Currently, the gas tax going to TransLink is 15 ¢ per litre.

**Calgary and Edmonton, AB:** These cities receive 5 ¢ of the provincial gas tax collected in each city, which can be spent on roads or transit

**Greater Montreal:** Gas tax of 1.5 ¢

per litre of gas sold

de Transport (AMT), Greater Montreal's regional transportation authority. The recent provincial budget proposes to double the gas tax for transit in Montreal and Quebec City. (28)

**Road or Bridge Pricing-Tolls:** Tolls are a direct user fee charged for use of a facility capacity and services. The toll can be a fixed or variable fee that a motorist pays to use a road, bridge or tunnel. It can also be a dynamic fee based on the time of day, level of congestion or level of emissions from a vehicle. Road pricing can be used to generate revenues to pay for infrastructure projects (i.e. specific bridge or road or transportation projects in general), reduce congestion and encourage public transit use. Road pricing allows for the efficient use of transportation.

### **Benefits**

- Places an explicit cost on a public good (found to result in more efficient use of a scarce resource)
- Can be used both to raise revenue and to manage congestion

### **Disadvantages**

- Can result in traffic diversion to routes that are not tolled
- Depending on how it is implemented, can be expensive to put in place While tolls have previously suffered from extremely high costs associated with manual collection at toll plazas and booths, the widespread adoption of electronic toll collection (ETC) systems over the last decade-and-a-half has dramatically changed the prospects of tolling for raising transportation revenue. The new and expanding capabilities of ETC technologies can support a variety of tolling schemes, enabling regions to tailor tolling applications to their transportation system and needs.
- Social equity concerns regarding ability of low-income individuals to use roads

### **Who Uses This Option**

**Toronto Region:** The 407 Express Toll Route, a 108-km highway, opened in October 1997. Driver approval is high and journey times on the 407 are found to be half those of similar, free highways.

**New Jersey State:** The New Jersey Turnpike uses a peak/off-peak toll differential for E-ZPass users; 7 % of motorists altered behaviour based on toll differential.

**Melbourne, Australia:** In 2000, the City Link Toll Road, a 22-km road connecting major routes between the airport, the port and industrial centres in the south-east, was introduced. In 2001, the Royal Automobile Club of Victoria reported that 89 per cent of motorists surveyed felt the toll road saved them time and 86 per cent of motorists surveyed felt the toll road made getting around the city easier.

**Japan:** Almost the entire Japanese highway network has been tolled since 1952 (covering 8,800 km). There is a standard charge for each vehicle for entering the highway system, with an additional per-kilometre traveled fee. (29)

A road tolling story has unfolded in Stockholm. Beginning in January 2006 as a seven-month trial run, weekday visitors were charged a fee, varying according to traffic volumes: from \$1.50 in off-peak hours, to twice that much at peak. As in London, traffic flow into the city centre was reduced by more than 20 per cent. Transit use soared; there were fewer accidents; vehicle emissions declined. In a referendum some months after the trial ended, Stockholm residents voted to make the arrangement permanent.

Tolls have aroused much public opposition elsewhere—referendums in Edinburgh, Manchester, and several Swedish cities failed—but always in advance of their introduction. Where tolls have actually been implemented (Milan, Oslo, and Melbourne are other examples), they have never been withdrawn.

**Congestion Pricing**- The most well-known form of congestion pricing is a cordon based system that charges all vehicles that enter a particular zone, usually the commercial downtown centre. Congestion pricing can be static (i.e. flat rate charge, regardless of time of day and other factors) or dynamic (fee levied is variable depending on time of day, level of congestion and other factors). Congestion pricing has the primary objective of reducing the number of automobiles on the road and thereby enhancing mobility and encouraging more efficient use of the roadway.

Congestion pricing is an efficiency pricing strategy that requires the users to pay more for that public good, thus increasing the net benefit for society. It is one of several alternative demand side strategies as opposed to supply side strategies to address congestion. Congestion pricing was first implemented in Singapore in 1975, together with a comprehensive package of road pricing measures, stringent car ownership rules and improvements in mass transit. With technological advances in electronic toll collection, Singapore upgraded its system in 1998. Similar road pricing strategies were implemented in Rome in 2001, as an upgrade to the manual zone control system implemented in 1998; Stockholm in 2006, as a seven month trial, and then on a permanent basis since August 2007. Milan in Italy introduced a traffic charge strategy for a one-year trial, called Ecopass that exempts higher emission standard vehicles and other, and later during the year the Ecopass was extended until December 31, 2009. Probably the most famous of these is London's congestion charge. Introduced in 2003, it is an example of a "cordon" toll, collected at a number of entry points ringing the city centre. The price is steep: \$15.50 on weekdays (up from \$7), charged to drivers using licence plate recognition. The plan has not been without controversy, notably over an abortive attempt to expand the toll zone, but there is no doubt it has succeeded in its stated aims: a 20-30 % reduction in traffic flows across the cordon in the first year.

#### **Benefits**

- Reduction of congestion and pollution There is a consensus among economists that congestion pricing represents the single most viable and sustainable approach to reducing traffic congestion. (30)
- Encourages commuters to choose non-car options
- Faster travel speeds for those vehicles in congestion-charge area

#### **Disadvantages**

- Potential for increased traffic outside of congestion charged road spaces
- Expensive to implement
- Pricing and enforcement technologies can be challenging
- Potential perception of privacy concerns
- Social equity issues, due to increased cost of cordon area travel (if driving)
- Works best when there are one or two defined areas, rather than multiple zones, attracting the congestion pricing fee

#### **Who Uses This Option**

**London, UK:** Implemented its Congestion Charge Scheme in 2003 with mixed results. Overall, since the Scheme began traffic entering the zone decreased by 21 per cent and bus passengers increased by 6 %.

**Oslo, Norway:** Implemented its first congestion area in 1987 and traffic dropped between 6 and 10 % cent, with the revenues rose being used for large-scale transportation improvements.

**Stockholm, Sweden:** A congestion area pilot project was introduced in 2006. Following the trial period, voters in Stockholm voted to keep the congestion area in place due to the benefits in mobility and reduction in congestion that were realized.

**Singapore:** Singapore implemented the first Areas Licensing Scheme in 1975. This scheme is a critical part of Singapore's efforts to limit car usage and congestion, with the result that only approximately 30 per cent of Singaporean households own cars. (31)

**Parking Surcharge**-A fee placed on non-residential parking spots, including those at offices, retail and other commercial sites. The parking surcharge can either be applied as a fee per parking space or as a fee based upon the total parking area. The parking surcharge can be levied on all parking spaces or only those for those in which a charge is currently incurred.

### **Benefits**

- Raising the cost of parking can encourage commuters to use public transit options
- If reduces car usage, can lead to reduction of sprawl, as commuters try to use public transit options
- If reduces car usage, can help to reduce congestion and pollution
- Easy to implement
- Better reflects the full cost of this resource

### **Disadvantages**

- Data unclear on actual pollution reduction where been employed
- May pose challenges for small and mid-sized businesses

### **Who Uses This Option**

**Metro Vancouver:** TransLink collects a 28 % parking surcharge which is applied to the purchase price of paid off-street parking. The parking sales tax is charged directly to the owners of parking facilities and it is their responsibility to determine if and how this fee is passed on to the consumer.

**Pittsburgh, PA:** Many U.S. jurisdictions levy a parking surcharge. Pittsburgh's is the highest in the U.S.; at 37.5 % (was 50 % from 2004 to 2009)

**Chicago, IL:** Chicago assesses a flat parking surcharge, rather than a percentage charge, on daily, weekly and monthly parking, with charges ranging from \$0.75-\$2 for daily parking, \$3.75 to \$10 for weekly and \$15 to \$40 for monthly parking.

**San Francisco, Cal:** Parking revenues from city managed, on street parking spaces and garages, as well as parking fines, partially support SF Muni operations.

**Perth, Australia:** Perth assesses the surcharge on property owners based on the number of parking spaces (AU\$169 to \$195 as of 2006), raising approximately AU\$9 million annually. Businesses with five parking stalls or less are exempted. (32)

## **e) Funding Sources Related to Region's Visitors**

**Hotel/Motel Occupancy Taxes-** Hotel/motel taxes are a common revenue generating mechanism employed by municipal and county governments in the United States. They are often employed only on specific days of the week, month or year and revenues are often used in the development, operation and marketing of tourism-related transportation facilities, such as in counties throughout the State of Washington and in Allegheny County, Pennsylvania. (33)

**Aviation Fuels Tax or Passenger Fees-** Similar to the federal motor fuels tax, revenue from the aviation fuels tax (also known as a jet fuels tax) can be used to supports a dedicated aviation trust fund which could be used for transportation purposes. Collected from suppliers, the jet fuel tax minimizes the administrative burden of collection. Use of aviation fuel taxes to support surface transportation investments not directly benefiting airports and the authorities that operate them is likely to encounter political resistance. Hence, regional applications of an aviation fuel tax may most attractive where one or more large airports are present in the region; where revenues support improvements that address airport access; or where revenues are viewed as compensation to local communities for externalities such as noise or pollution from the airport. If adjusted to keep pace with inflation, an aviation fuel tax could provide a growing source of revenue over time, as air passenger travel has generally continued to rise over the last two decades. However, occasional slumps in air travel may make this tax less stable in the short term.

Alternatively, a fee can be charged per outgoing passenger to pay for transportation projects. The Vancouver International Airport charges a \$20.00 fee per passenger flight, and these monies have been used to build rapid transit stations on the new Canada, and other airport capital enhancements

**Car Rental Tax-** Municipal and regional authorities may choose to use revenue from locally imposed taxes on the vehicle rentals to fund transit services. Vehicle rental companies are typically responsible for reporting and remitting these taxes.



Similar taxes may also be levied on the leasing of vehicles, taking the form of a sales tax on the monthly rental lease agreement. Rates typically range from 1% to 2% Allegheny County in Pennsylvania (Pittsburgh) enacted a \$2 rental car fee to support Port Authority Transit Services (34).

#### **Benefits of Above-Noted Visitors' Taxes**

- Easy to implement

#### **Disadvantages**

- May discourage tourism to an area
- Not well related to their use for transit services and alternative modes
- Fluctuate with economy

#### **f.) Others Funding and Financing Sources**

##### **Public Private Partnerships or Cost Saving Methods**

Within a Public-Private Partnership (P3) framework, the government acts as a client awarding a private sector partner a contract to carry out major public construction and maintenance projects. Under P3s, the construction and operation risks are shared between the public and private sector.

P3s have been successfully used around the globe for transportation projects, especially in Europe and Australia. In Canada, the federal, Ontario and British Columbia governments have made strong commitments to building infrastructure, where appropriate, using a P3 or Alternative Financing and Procurement (AFP) model. The creation of PPP Canada, Infrastructure Ontario and Partnerships BC, and the successes experienced by each, reflect the importance each of these governments have placed on using P3/AFP models to build critical public infrastructure. P3 transit projects have only recently been undertaken in Canada, with the Canada Line in Vancouver being the only one completed so far (the Union-Pearson Air-Rail Link in Metro Toronto is being built according to a similar model).

Public-private partnerships can also occur through asset leasing or with the private financing of new facilities. An asset lease occurs when the public sector leases an asset such as a toll road, a bridge or airport to a private sector body. The private sector body is then responsible for providing the upfront payment or for revenue sharing. Asset leases are known as concession agreements and can last as long as 99 years. Private financing management can also be used, in addition to asset leases, allowing the private sector to take on other functions including designing, building, financing, operating, and maintaining transportation infrastructure projects.

P3s/AFPs, when structured properly and used for the appropriate projects, have been shown to be effective in getting infrastructure projects built on time and on budget. But P3s/AFPs are not appropriate in all instances. Governments must examine the value-added benefits before pursuing a public-private partnership. (35)

**Carbon Tax** -A government can implement a carbon tax per tonne of carbon dioxide equivalent and the tax rate can vary according to the emissions from alternative types of fuel. For example, in 2008 the BC Government initiated a carbon tax on different kinds of fuels, with the rate starting at \$10 per tonne of carbon dioxide and has increased at 5 % per tonne annually to \$30 per tonne in 2012. Revenues from this tax are returned to individuals through various tax cuts and rebates, including a \$100 per resident Climate Action Dividend distributed June 2008, and special rebates for low income households.

#### **Benefits**

- Broad coverage. The tax applies to all fossil fuels, based on their carbon content. This makes it credible and efficient to administer compared with taxes that vary depending on where or by whom fuel is consumed
- Gradual and predictable implementation. The tax will increase gradually and predictably so consumers and businesses can take higher future energy costs into account when making long-term decisions, such as vehicle purchases and building locations.
- Revenue-neutrality. Revenues generated by the tax are returned to individuals and

businesses through reductions in other taxes.

- Protection for lower-income households. Tax reductions and rebates are structured to aid lower-income households and other disadvantaged groups.

#### **Another Factor-Municipal Means of Establishing Priorities for Operational and Capital Funding**

Another factor which will direct more funding towards transit and alternative modes of transportation versus roads and bridges, will be for municipalities to revise their transportation policies, plans and transportation investment decision-making models, to reflect a much higher priority to investing in transportation modes which contribute more to reducing greenhouse gas emissions, have greater person carrying capacity, are more sustainable, and consume less land –walkways, cycleways, transit and roads/bridge in that order.

### **4.0 Overall Evaluation of Alternative Funding Sources**

Using the criteria in Table 1, the overall evaluation of the alternative funding sources is shown in Table 2. This table indicates that:

- The current indirect fee system based upon taxes paid for fuel consumed or other similar means (e.g. property taxes, retail sales tax, and gasoline taxes) provides only weak signals to use the transportation system in the most efficient ways.
- There is a need to obtain public and legislative support for new forms of transit and alternative mode funding, through broad-based public and stakeholder consultation and strong communication programs. Support should be obtained for funding sources that are most directly related to influencing travel behaviour. These funding options include, in the short term, vehicle registration fees related to vehicle size and full fuel performance as well as parking surcharges. In the medium to longer term, both road and bridge tolling or pricing and a vehicle per kilometer systems or VMT system are potential sources. Several alternative funding sources are required to guard against one source declining and to ensure significant and sustainable revenue. These sources will also ensure that the benefits from alternative transportation investments are captured from both those who use the transportation system on a daily basis and those who benefit in a broader sense in terms of reduced greenhouse gases, improved mobility, more prosperous economic development and increased employment.
- The large regional transportation authorities in North America have the largest advantage in pressing upper levels governments to provide the legislative authority for them to develop and implement these transit and alternative mode financing means, especially since they will be reluctant to directly transfer other existing provincial revenue sources of revenue. These regional transportation authorities can then serve a role in breaking new legislative ground in urban transportation funding for other smaller municipalities to group together to gain the support of provincial transfers to them for new and similar transportation financing means.

### **5.0 Conclusions and Recommendations**

#### Conclusions

Key conclusions reached from this paper include:

- There is clearly a need for significantly more funding for transit and alternative forms of transportation (walking and cycling) throughout urban regions in North America in order to replace aging infrastructure and to ensure continued safety in the use of this infrastructure, and to significantly increase the uses of these























































































































modes for the benefits achieved—enhanced mobility, reduced congestion, more economic development and employment achieved, reduced greenhouse gases, reduced accidents and property damage, and lower roadway costs




































- There is a strong possibility that increased funding for alternative modes from higher level government—federal and states/provinces may be reduced or at best remain constant, despite increased needs, due to other great pressures for funding from these government levels for health and education purposes. Funds from higher level government will most likely remain for capital purposes and not operating, due to the reluctance of higher level governments to fund operating costs which can be manipulated by strong unions. This, therefore, will place more pressure on now designated and non-designated urban regions to co-operate among municipalities, and develop, consult widely with stakeholders and the general public, and implement their new means of transportation related capital and operating funding, and to obtain the required provincial/state legislative approvals.
- Overall our transportation systems and their components in North America are underpriced. All too often the prices paid by transportation system users are markedly less than the costs of providing the transportation services, and even much less when you include the negative externalities mentioned above.
- The predominance of the current financing system for transit systems in the US and in some larger Canadian metropolitan areas (e.g. Vancouver) using indirect forms of financing (e.g. property taxes, retail sales tax, gasoline taxes) provide users with weak signals to use the transportation system in the most efficient means.
- There is a need to obtain public and legislative support for new forms of transit and attentive mode funding from a broad source of funding means that are mostly related to influencing travel behavior. These include vehicle registration fees related to vehicle sizes and full performance, and parking surcharges in the short term, and both road and bridge tolling or pricing, and a vehicle per kilometer systems or VMT system in the medium to longer term. Implementing several alternate means with significant cumulative TDM effects together, are required to guard against one source declining and to ensure the benefits from transportation alternatives mode investments are captured from both those who use the transportation system on a daily basis and those who benefit in a broader sense in terms of reduced greenhouse gases and improve mobility and more prosperous economic development and increased employment.
- A funding system based on more direct forms of “user pay” charges, in the form of a charge for each mile driven (commonly referred to as a vehicle miles traveled or VMT fee system) or road/bridge tolling pricing system, are the most viable approaches to efficiently fund investment in alternative modes transportation in the medium to long run. This system should be designed to be a user charge system based more directly on miles driven (and potentially on factors such as time of day, type of road, and vehicle weight and fuel economy) rather than indirectly on fuel consumed. As well, such a system can and should be designed in ways that protect users’ privacy and civil liberties that do not interfere with interstate commerce, and that support goals for carbon reduction. Moreover, greater use of pricing mechanisms, including both targeted tolling and broad-based VMT pricing systems, may spur more efficient use of the roadway network and, by shifting demand to less congested periods of the day or to other modes, may in turn enable more efficient investment, thus reducing the additional capacity that needs to be built.

To gain support for developing and implementing these more directly related TDM funding systems for transit and alternative modes, local and regional governments and regional transportation authorities need to partner with provincial/state officials to obtain the legislative authority for these new funding means, and undertake the following actions to develop, obtain acceptance and successfully implement future funding sources for transportation operations and capital investments:

1. **Ensure Efficient and Effective Operations and Capital Investments Now**-Ensure that your transportation operations and capital investments are as efficient and effective as they can be now to gain public creditability and support before asking for new funding sources from the public.
2. **Conduct Broad Dialogue and Stakeholder/Public Outreach Before Asking for New or Enhanced Funding**-A full and broad stakeholder and public dialogue and consultation/communication effort is required to truly engage everyone in what objectives people want to achieve with the transportation network including transit and alternative modes, and what specific projects and funding sources are required in the short and long term. This can be combined with updating regional and local transportation visioning and transportation and land use master plans. This kind of public outreach effort is imperative to a successful transition, for once individuals understand better both the current predicament and the optimum achieve positive change; they are more likely to support it.
3. **Need to Establish Clear Linkages between Enhanced or New Funding Sources and Transportation Projects For Which Additional Funding Is Being Used**- For political public and stakeholder support of financing sources it is very important to establish clear linkages between the funds being collected from specify funding sources and how they are to be used effectively and efficiently to improve the transportation system in specific geographic locations.
4. **Revise Mode investment Policies**- Another factor which will direct more funding towards transit and alternative modes of transportation versus roads and bridges, will be for municipalities to revise their transportation policies, plans and transportation investment decision-making models, to reflect a much higher priority to investing in transportation modes which contribute more to reducing greenhouse gas emissions, have greater person carrying capacity, are more sustainable, and consume less land –walkways, cycleways, transit and roads/bridge in that order.
5. **Need Assistance Where There are No Regional Transportation Organizations to Push for New Funding Sources**: When there are no regional transportation authorities to push provincial governments for the legislative authority for developing some new transportation funding sources, there is a need for local governments in other regions to work together to conduct the stakeholder/public consultation and higher level lobbying and working with national organizations such as CUTA and the Transportation Association of Canada (TAC) and the counties regional transportation authorities.
6. **Need for Both Local, Regional and Provincial/State Champions for Enhanced and Expanded Funding for Transit and Alternative Modes**-There must absolutely be local, regional and provincial/state champions who will support legislative changes(if required) or other actions in order to obtain expanded alternate mode funding.
7. **Develop Standardized VMT Technology**- With many municipalities wanting to pursue a VMT funding system, the provincial and key municipal transportation representatives should work with automotive vehicle manufacturers and TAC to develop national standards for the required technology.

Table 2-Summary Evaluation of Funding and Financing Options for Transit and Alternative Modes

Revenue Source	Transparency	Revenue Generating Potential and Financial Sustainability	Ease and Cost of Implementation	TDM Effects and Transportation Efficiency	Technical Feasibility	Popularity/ Political and Legal Acceptability	Equity- Geographic and Income
RELATED TO ALTERNATIVE MODES							
Raise Fares and R/C Ratio or Full Cost Recovery							
Implement New Pass Types (e.g. U-Pass, Community Pass etc.)							
Increased Advertising Revenues							
Increased Federal/ Provincial Grants							
New Fare Media and Fare Collection Technology (e.g. SmartCards, Smart Phones, Debit Cards)							
DEVELOPMENT RELATED							
Value Capture							
Raise Property Taxes							
New Transit Development Levy							
BUSINESS AND ECONOMIC GROWTH RELATED							
Employer Payroll Tax							
Implement or Raise Retail Sales Taxes							
Cargo Tax on Containers							
TRANSPORTATION RELATED							
Parking Surcharge/Levies							
Vehicle Miles Driven & Type of Vehicle-VMT							
Road/Bridge Tolls & Pricing							
Vehicle Registration Fees/Levy							
Congestion Pricing							
Gas Taxes							

Revenue Source	Transparency	Revenue Generating Potential and	Ease and Cost of Implementation	TDM Effects and Transportation Efficiency	Technical Feasibility	Popularity/ Political and Legal	Equity- Geographic and Income
<b>VISITOR TAXES</b>							
Rental Car Fee							
Hotel/Motel Occupancy Tax							
Airport- Fuel and/or Passenger Fees							
<b>OTHER</b>							
Carbon Tax							
Financing Means-Public-Private Partnerships							

Symbol



5: Revenue source meets criterion extremely well



4: Revenue source meets criterion very well



3: Revenue source meets criterion well



2: Revenue source meets criterion somewhat



1: Revenue source meets criterion poorly or not applicable

## **Footnotes**

1. Canadian Urban Transit Association (CUTA), 2010, Issue Paper No. 38, Bridging the Gap: The Federal Role in Transit Investment
2. Canadian Urban Transit Association (CUTA), 2008, Issue Paper No. 30, "The Optimum Level of Supply and Demand for Urban Transit in Canada"
3. National Surface Transportation Infrastructure Financing Commission (2009), "Paying Our Way-A New Framework for Transportation Financing, Page 2
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