Achieving Sustainable Urban Transportation: The Decision Making Challenge

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Abstract

Reduced automobile dependence and improved competitiveness of transit for a wider variety of trip purposes are common goals of most attempts to improve the sustainability of urban transportation in medium and large Canadian cities. However, our collective ability to 'get things done' and make meaningful and cost effective improvements in public transit appears to be on the decline, largely due to conflicting objectives, a multiplicity of government agencies, questionable models of transportation agency governance, the lack of realistic financial models, and a very cumbersome process for the review of transportation decisions.

This paper focuses on three important aspects urban transportation decision making, namely, governance models, the planning process, and more innovative financing.

First and foremost, it highlights the crucial role that good governance plays in the delivery of effective solutions required for the economic well being and liveability of our cities, and suggests new models of governance.

Second, the paper also focuses on the planning process itself, emphasizing the need for a return to traditional bottom-up planning based on assessments of real needs and benefits, as a substitute for top-down, politically motivated planning that characterizes most transportation initiatives today.

Finally, the paper treats the matter of finance. Funding programs that must stand the test of the annual municipal, provincial, and federal budget processes are simply inadequate to provide the predictability needed for effective long-term infrastructure planning. Funding should involve more than simply pleading for more project-specific dollars from the provincial and federal governments.

Because experience shows that short-term, project-specific infrastructure programs lack continuity, create uncertainty, and alter local priorities, the paper identifies a number of measures for placing transit finance on a more predictable basis, including a shift to funding guarantees that can be used to service debt and leverage financial community participation in accelerated infrastructure expansion.

Achieving Sustainable Urban Transportation: The Decision Making Challenge

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1. Background

Driven in large part by the obvious gap between growth in population and investment in transportation infrastructure, concerns about transportation gridlock are receiving ever-increasing attention in almost every Canadian city of reasonable size. Deterioration in the performance of the overall transportation system can also be attributed to the manner in which growth has evolved, generally in ways that are very difficult to serve by efficient public transportation and ways which have resulted in lifestyles that are increasingly automobile dependent.

For these reasons, reduced automobile dependence and improved competitiveness of transit for a wider variety of trip purposes are common goals of most attempts to improve the sustainability of urban transportation in medium and large Canadian cities.

However, as treated elsewhere, our collective ability to 'get things done' and make meaningful and cost effective improvements in public transit appears to be on the decline, largely due to conflicting objectives, a multiplicity of government agencies, questionable models of governance for transportation agencies, the lack of realistic financial models, and a very cumbersome process for the review of transportation decisions.(1)

Despite these difficulties, recent surveys (as, for example, an Ipsos-Reid survey in Toronto) found that:

- Transportation is a high priority for two out of three residents,
- Encouraging more people to use public transit is seen as the best solution to the traffic problem, and
- Public transit is equally important to drivers and transit users.

This paper focuses on three features of urban transportation that are critical with respect to more effective decision-making, improving the performance of urban transportation systems, and achieving goals for sustainability. These features are governance, the planning process itself, and more innovative financing.

2. Governance

Where urban transportation is concerned, the matter of governance is the single most important issue that affects the decision-making process and subsequent implementation of adopted investment and policies. Governance also influences all aspects of the performance of various elements of a municipality's transportation system including traffic engineering, the delivery of public transit, parking policies, priorities for pedestrians and bicycles, and labour relations.

Governance and decision making, of course, are almost two sides of the same coin. They are highly inter-related and affect not only what decisions are actually made, but how and when they

are implemented, as well. With expansion in population and the size of the urbanized areas, models of governance that were appropriate at one time may well be outdated in relation to today's problems, let alone those of tomorrow.

Governance models typical of most urban transportation agencies in Canadian municipalities present serious challenges for comprehensive transportation planning and decision making in response to changing goals and objectives. There are several reasons.

First, governance bodies that are intended to provide executive oversight for management are almost always comprised of political appointees who, in many cases, are themselves elected officials. The fundamental problem with elected officials serving as 'directors' is that, typically, they are influenced by parochial views related to looking after the interests of the constituencies they represent. This practice is a fundamental contradiction of the basic rules of any governing body, namely, that each member has a fiduciary responsibility to make decisions in the best interests of body to which they are appointed.

Second, voting is highly influenced by too short a time horizon. Many decisions on important long-term issues are often postponed simply to avoid public discussion during a time when they could affect election outcomes. In other words, the short-term perspective of governance body members who must stand for re-election at a local level minimizes the potential for long-term, comprehensive planning at an area wide scale.

Third, because transit issues have such a high public profile, governing body members who periodically must stand for re-election, do not lose opportunities for publicity by engaging in matters that are the proper domain of management. Examples of the failure to distinguish between executive oversight and micro-management abound and the demarcation line between the two functions is, at best, blurred.

Fourth, elected officials who are transportation agency board members end up voting on matters twice – first as board members, and second, as city councillors responding to their own recommendations when they are presented to municipal councils. In fact, it is not unheard of for a board member to vote one way on the governing body and the opposite way in council.

Fifth, board members who are also elected officials often reach down directly into the organization regarding matters that relate to individual constituents or, even in some cases, to obtain support that may be helpful to their own election campaigns. Bypassing the chief executive and dealing directly with staff is contrary to any concept of effective management. It certainly diverts staff attention from their main responsibilities and may also place staff in an awkward situation. Such practices constitute an abuse of authority, a misuse of taxpayers' funds, and provide an unfair advantage from the standpoint of competitors who may be seeking office without equal access to public servants.

Some of these concerns can be eliminated if appointments to governing bodies are restricted to non-politicians (or, at least, a mixture of both). Although the process for political appointments may well be imperfect, it does allow individuals to be appointed who actually have experience or expertise that is germane to the goals and objectives of the agency they are appointed to govern.

In an era where the context for sustainable transportation planning is dominated by concerns about finance and efficiency, as well as community, environmental, and social 'friendliness', effective governance requires bodies that include individuals with expertise and experience in relevant disciplines. These include engineering, construction, municipal finance, urban planning, environmental assessment, management of transportation organizations, information technology, and labour relations.

Good governance requires boards or commissions comprised of individuals who:

- First and foremost, recognize a fiduciary responsibility to act individually in the best interests of the entity which they govern,
- Are capable of taking a long term and comprehensive view of major policy and financial alternatives,
- Can distance themselves sufficiently from any personal conflicts of interest,
- Represent a broad range of experience and expertise in a variety of relevant disciplines to ensure that executive oversight is provided as objectively as possible, and
- Accept that as members of an executive oversight body, they essentially have only one employee, namely, the chief executive of the agency.

In short, the objective of good governance is to make the right decisions. The objective of good management is to do the right things right. There is an important distinction between the two, one that is rarely recognized in the governance of most public transportation authorities charged with developing sustainable urban transportation.

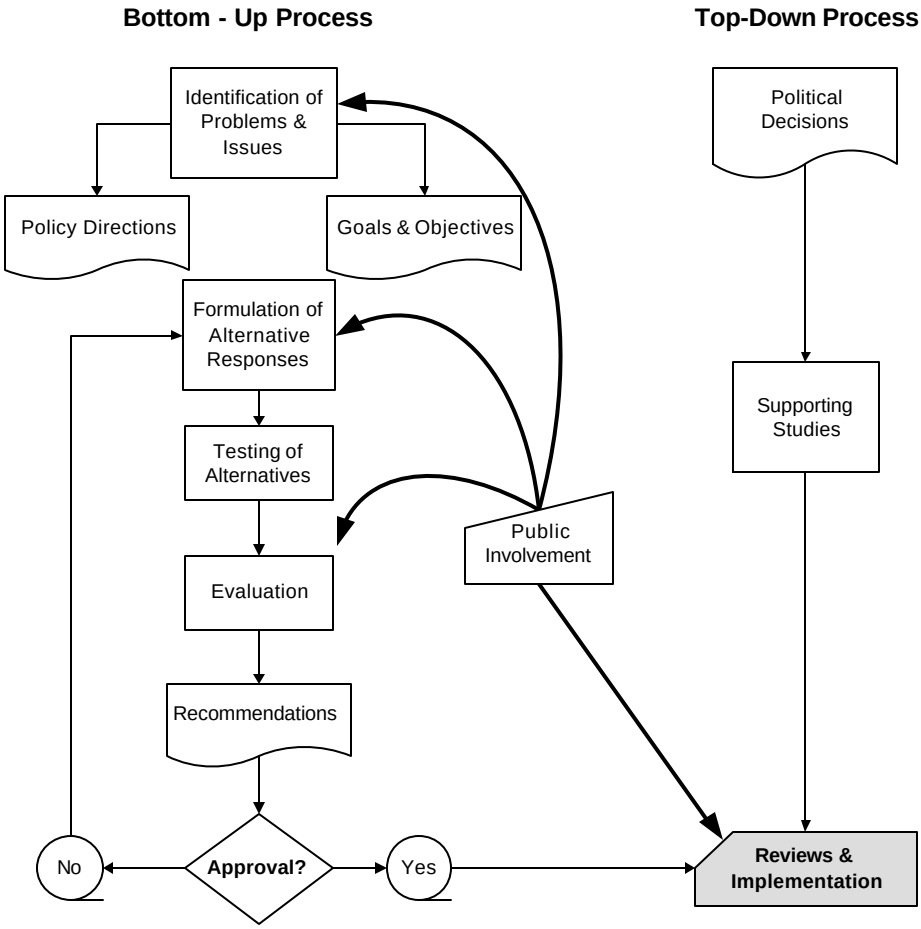
3. The Planning Process

Traditionally, the development of transportation plans has followed a number of fairly straightforward steps that, as illustrated in Figure 1, begins with problem identification and ends with recommendations. In this 'bottom-up' approach, the first step, problem identification, is the really critical one. It may be as simple as demonstrating that growing congestion will create tremendous costs that impact negatively on the economic competitiveness and general attractiveness of a community as a place to live, work, and play.

In many Canadian cities, however, the flurry of federal, provincial, and municipal government announcements raises interesting questions pertaining to the traditional process through which transportation plans are developed and ultimately implemented.

Too often, these promises emerge as preludes to election campaigns. They are examples of 'top-down' planning in which elected officials dictate what their professional advisors will implement, as opposed to the approach in which proposals are generated by professionals in response to needs for consideration by the body politic.

Figure 1 – Comparison of Planning Processes



The main argument for this change in the nature of the traditional planning process is that professionals have failed to understand the 'new' policy objectives that should guide urban growth and the associated requirements for transportation. In fact, the so-called 'policy' orientation of this new paradigm is founded on the belief that professionals are incapable of responding to changing goals and values.

It has also generated a host of new terminology for old ideas – mobility hubs instead of activity centres or nodes of growth, active transportation instead of greater dependence on walking and cycling, and 'back casting' instead of setting goals and objectives.

The underlying assumption is that today's transportation engineers and planners are pre-occupied with extrapolating trends, projecting future needs, and recommending increases in capacity to service these needs.

That reasoning represents a pretty antiquated view of how transportation plans are prepared. Over the last 40 to 50 years, no *reasonable* transportation plans have been prepared in that manner, nor have academic institutions taught their students in that way.

Clearly, objectives of transportation planning are continually changing from the goals for 'balanced' transportation that characterized planning in the '50s and '60s, to goals for reduced automobile dependence, sustainability, and reduced emissions that have characterized the vision statements of most transportation master plans in the '80s, '90s, and post 2000 era. Those goals derive from the definition of problems and issues, which, themselves, are continually in a state of change.

The real problem with the top-down approach, however, is that transportation planning becomes a mechanism for accommodating the policy agenda without question, without debate, and without consideration of a sufficiently broad range of alternatives for achieving the same goals.

As a result, the concept of 'best practices' takes a back seat to one in which professionals feel they have little choice but to follow political directives and, in the process, suppress or 'sanitize' real data and information that might be construed as controversial or disloyal.

4. Finance

Increasingly, a strong commitment to transit has become the cornerstone of most approaches to sustainable transportation in urban areas. Delivering that commitment, however, carries a substantial financing responsibility both for capital funding of new infrastructure, as well as operating subsidies.

All recent discussion of municipal finance has been dominated by concerns about the infrastructure deficit and the growing difficulty that municipalities have in meeting their capital needs. Capital is required both for the repair and rehabilitation of existing infrastructure, as well as the needs for infrastructure expansion to keep pace with growth in population.

The need for infrastructure funding has been recognized in various federal and provincial government initiatives, probably the most important and well received of which was the first Canada Infrastructure Works Program.(2) The CIWP showed that municipal, provincial, and federal governments are capable of working together effectively to produce real benefits for those who live in Canadian towns and cities.

The infrastructure gap includes urban transportation as much as it does other public sectors such as water supply, sewers, hospitals, and schools. At the national level, the infrastructure gap has been documented by agencies and organizations such as the Federation of Canadian Municipalities (3) and the Conference Board of Canada (4) and, at the regional and local level, by special interest groups (5) and various boards of trade.

Within Canada today, the approach to funding urban transit can be characterized by a chorus of pleas for more dollars from the provincial and federal governments, while lamenting the fact that elsewhere in the world, municipalities have obtained significant funding from national governments. In this 'ask and pray' approach, today's municipal transit strategy appears to be one of making requests and hoping for the best. Such requests have sometimes been granted and, in other cases, denied, or even worse, been left unanswered.

One of the nastiest examples occurred in Toronto when, after construction of a subway had already begun based on committed provincial funding, a new government reneged on funding promises, forcing the project to be halted. That example represented one of the worst possible funding scenarios any municipality might face, as well as an indefensible waste of taxpayer's dollars.

Cost recovery (or the operating ratio), which is the ratio of revenues to operating costs, dictates whether revenues from a transit service make any contribution to capital investment. So long as cost recovery is less than 100 percent, there is no contribution to capital expenditures from the fare box, either for construction or vehicle replacement.

Almost everywhere in the world, transit fare revenues are insufficient to cover the full costs of operation and maintenance, let alone capital investment in infrastructure. Figures 2 and 3, for example, show operating ratios for selected operations in North America, as well as Canadian cities and population categories. All require subsidies to offset operating deficits.

Thus, in addition to major infusions of new capital consistent with the emergence of transit-oriented policies, as service expands, there will be a need for ever higher operating subsidies in absolute terms.

Table 1 compares sources of provincial and municipal transportation subsidies for the Greater Toronto Area (GTA), Montreal and Vancouver. These are typical of most Canadian municipal transit operations. Although periodically, there has been special funding for projects and programs (such as the Gas Tax Transfer), the federal government has not been a major player when it comes to financing urban transportation in Canada. In some cases, federal contributions and announcements have been significant, but only for short time periods that are inconsistent with the long-term nature of infrastructure investment.

Regardless of the source of capital investment or operating cost subsidies, the main funding issues concern the need for:

- Greater continuity in federal government commitment to transit finance,
- Funding predictability,
- Opportunities for productivity improvements that reduce financial requirements, and
- New financial instruments.

The need for federal government funding

Associations, such as the Federation of Canadian Municipalities (FCM), continue to argue that as one of the few western nations without long-term commitments to urban transit, the federal government should adopt a national transit strategy with funding of about $2 billion annually.(6)

Figure 2 – 2006 Transit Cost Recovery in North America

Source: GO Transit

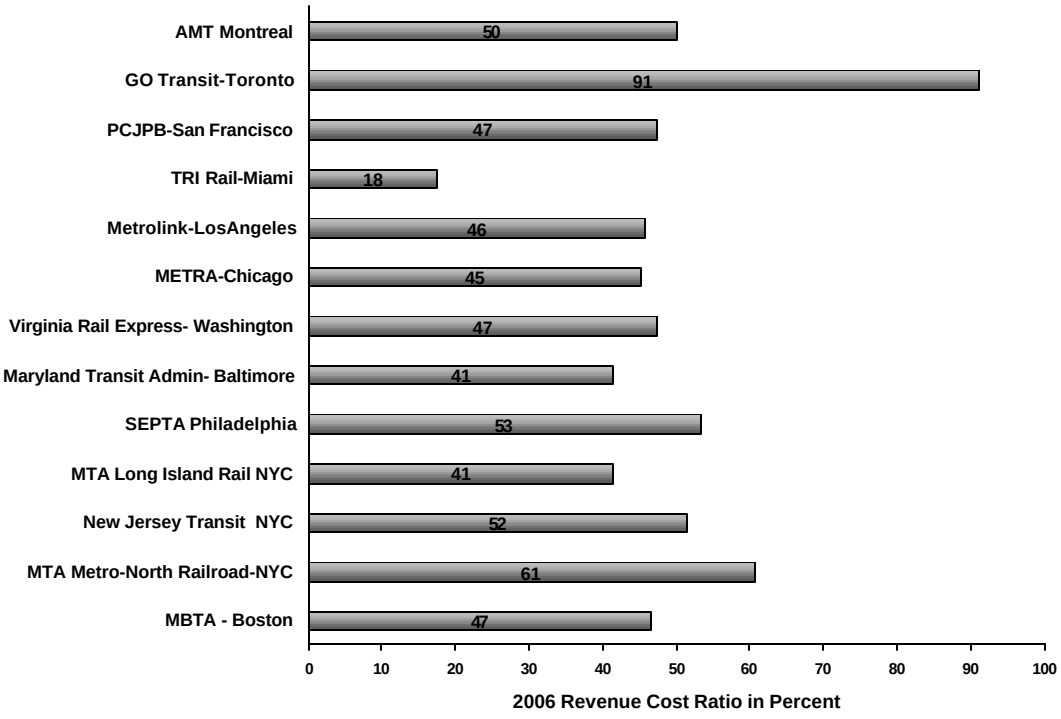
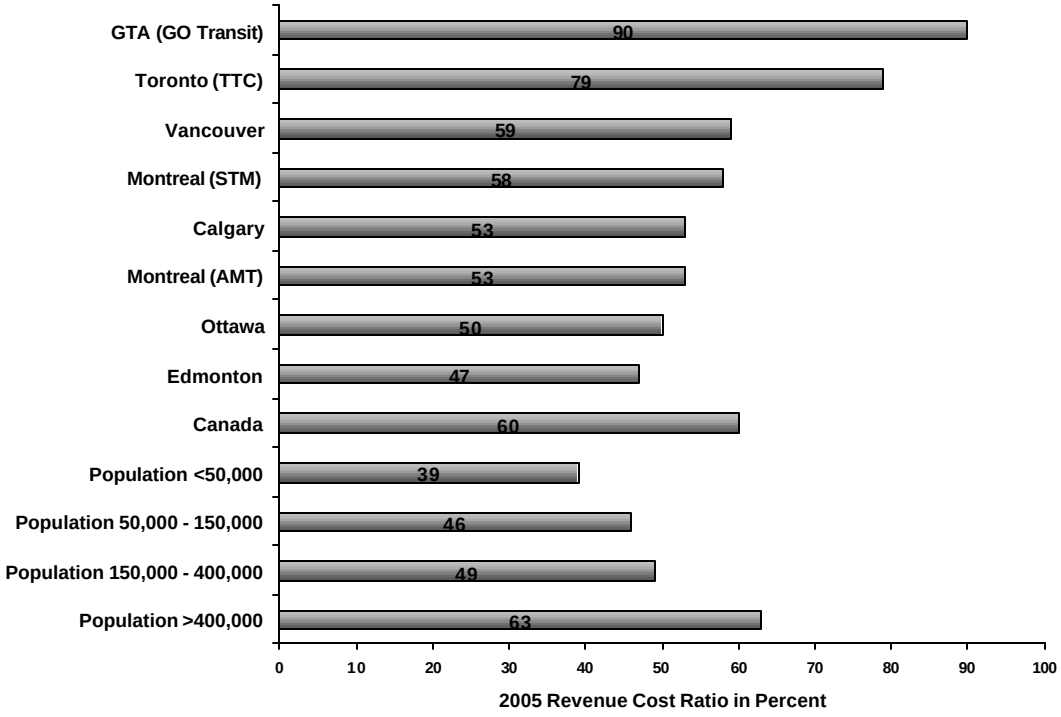


Figure 3 – 2005 Transit Cost Recovery in Canadian Municipalities

Source: FCM based on Canadian Urban Transit Association data



Spain is often used as a model of effective national government funding (supplemented by EU funding) for accelerated subway expansion and, in the U.S., the Federal Transit Administration was established almost solely to fund urban transit projects.

FCM's (and others') basic premise for national government funding derives from national objectives for reductions in greenhouse gas emissions (and related impacts on global warming) and the fact that the urban infrastructure deficit, in general, reduces the competitiveness of Canadian municipalities and stifles economic growth.

In fact, as cited by the FCM, according to the United Nations, Canadian cities rank lower than U.S. and European cities in terms of competitiveness, quality of life, and the business environment. The inference is that increasing investment in urban infrastructure is extremely important if Canadian cities are to compete more effectively in a global economy.

Table 1 – Comparison of Transit Finance in Toronto, Montreal, and Vancouver

Region	Agency	Responsibilities	Non-Fare Revenues
Montreal	Agence Metropolitan de Transporte (AMT)	All transit in the entire conurbation	Dedicated gasoline, vehicle registration and property taxes, Non-residential parking tax, Provincial and local general revenues
GTA	City of Toronto, Region of York, Region of Durham Mississauga Transit Other local operators	Independent local transit services and road planning	Municipal property taxes, Provincial contributions Some portion of development charges for *existing* services only.
GTA	GO Transit	Inter-regional service	Provincial and municipal contributions
Vancouver	Translink	Transit, highways, roads, bridges, tunnels, and parking throughout the entire region.	Dedicated gasoline, property, power (hydro), and parking taxes

The cry for federal transit funding, incidentally, is entirely consistent with the 2006 statement by the Minister of Transportation, Infrastructure, and Communities. In *Reporting Back to Canadians on Provincial/Federal Consultations*, the Minister noted that consultations:

> clearly show that provinces, territories and municipalities support a long-term framework for infrastructure funding based upon predictable and stable funding, more flexible program design that could be adapted to their own priorities, and simplified and streamlined reporting and auditing mechanisms that focus more on outcomes rather than on project selection processes.(7)

Understandably, there are often sizeable differences between what is announced by any level of government and the actual transfer payments that find their way into the budgets of operating

agencies. In part, these differences occur due to inflation between the time plans are announced and the time when investments are actually made. They can also be traced back to very cumbersome and lengthy processes for negotiating inter-government contribution agreements.

Delays in program administration between governments and the resulting inflationary impacts are major complaints frequently voiced by municipalities in the case of most existing infrastructure programs (other than the federal government's Gas Tax Transfer, considered to be a model of efficiency and effectiveness).

Funding predictability

In today's environment, transportation agencies rely almost entirely on annual budget approvals at all levels of government (including their own) to determine what funding will be available for transit and other infrastructure. Here, the main weakness concerns the unpredictability of funding and the restraints imposed on long range planning as a result of this uncertainty.

No organization, of course, can function effectively without some estimate of cash flows over a reasonable time period. Given the long-term nature of infrastructure needs, the ability to predict and rely upon future revenues (including subsidies) and costs suggests that knowing precisely *what* quantum of funding can actually be counted upon is likely as important as the quantum itself.

Experience with the Toronto's abandoned subway, noted above, also shows, unfortunately, that continuity in well-established programs can never be taken for granted. Even though *ad hoc* project support and short-term infrastructure programs are always welcomed on a political basis, the new federal Building Canada Fund, for example, replaced, rather than enhanced, the previous time-limited Public Transit Capital Trust.

Despite an increase in the annual level of infrastructure funding, Budget 2007 did little to address the issue of predictability.

One study by the FCM probably best sums things up as far as long term predictability is concerned:

> While ad hoc contributions from the federal government have been useful, they have not provided the long-term structural solution needed to fix the municipal infrastructure deficit permanently. The Federal Gas Tax Fund should be the centerpiece of the federal government's response. The first step is to make the Federal Gas Tax Fund permanent…and to enshrine this commitment in federal legislation. (8)

An important corollary of this recommendation is that the quantum of the fuel tax transfer be indexed to reflect both inflation (as measured by the CPI) and growth in population. Since the goal is to eliminate the infrastructure deficit, adjustments for population growth helps close the gap rather than simply staying even.

In many respects, the FCM endorsed recommendation brings closure to the issue of predictability on the revenue side. Other uncertainties associated with controlling operating

costs and increasing ridership and fare revenues are the proper responsibility of municipalities and operating agencies themselves.
Were federal legislation guaranteeing future funding to be enacted, similar action by provincial governments would place the issue of predictable transit infrastructure funding on a much sounder basis than current practices. And, as treated below, predictable funding opens the door to alternative forms of financing.

Productivity improvements that reduce financial requirements
Although the need for transit capital and operating subsidies is well established, there are opportunities for cost reductions in the delivery of transit service that do not seem to have received as much attention. Obviously, if costs can be reduced through improvements in productivity, for any given level of service, subsidy requirements can also be reduced or, alternatively, service can be expanded for the same absolute level of subsidies.

The two main opportunities for improvements in transit productivity concern the use of street space and labour.

A great deal of current planning for transit expansion, for example, is based on providing higher priority for bus and rail transit vehicles (BRT and LRT) on existing streets and roads. Operation in segregated rights-of-way and transit priority lead to increased average speeds.

Aside from the obvious benefits of higher average speed on ridership, higher average speed is synonymous with higher productivity. (For airlines and marine transportation, for example, total round trip time is the largest single factor that affects productivity of vehicle use.)

For transit, cycle time (the time needed to complete one round trip) dictates the number of vehicles and drivers required to achieve a design capacity. If, for example, a streetcar service that runs every 5 minutes over a 10 km route requires 60 minutes to complete one round trip, 12 vehicles and drivers are required. (9)

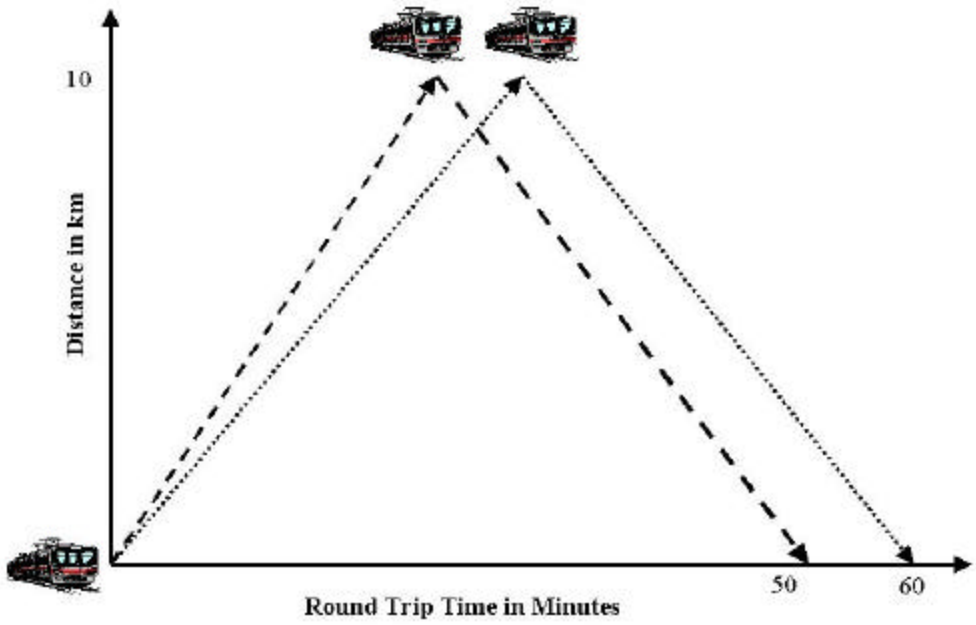
As illustrated in Figure 3, assuming 5 minutes can be saved in each direction (30 seconds at 10 intersections, for example), the 20 percent saving in cycle time translates into a corresponding reduction in the number of vehicles and drivers needed to provide the same capacity, a saving that, in turn, translates into reduced funding requirements (both capital and operating).

Achieving this improvement in performance, however, requires a high proportion of operation in segregated lanes as a minimum requirement. Providing more segregated lanes for transit (thereby realizing improvements in productivity and corresponding reductions in subsidy requirements) can only be achieved in combination with policies that reduce automobile capacity and on-street parking, introduce turn restrictions, and provide transit priority at signalized intersections. Higher transit productivity, therefore, requires a commitment at the local level to take measures (usually unpopular) to ensure that higher average line haul speeds are achieved.

Improvements in labour productivity also afford opportunities for reducing the magnitude of necessary funding. Labour is the largest single component of transit operating costs. Since the nature of transit demand is highly peaked during the morning and afternoon 'rush' hours, transit is a service that is ideally suited to greater use of part-time labour.

It comes as no surprise, of course, that the use of part time labour is a very contentious matter, politically, and from the standpoint of labour-management strife. However, at the risk of repeating what has already been noted in the RCCAO *Transportation Challenges* report, "when all is said and done, transit is subsidized in order to provide a needed public service that is not commercially viable; it is not subsidized as a means of employment creation."

Figure 2 – An Example of Transit Priority



Item	Without priority	With Priority
One-way time (min.)	30	25
Round trip time (min)	60	50
No. of streetcars/drivers	12	10

New financial instruments

As noted above, the common practice of basing expenditures on the year-to-year approval of budgets impedes effective long-term planning because of the uncertainty created by this process.

Historically, municipalities, as well as other public agencies have also relied on various financial instruments such as municipal bonds to supplement infrastructure funding. Following the formation of Metropolitan Toronto in 1953, for example, the Municipality issued 10 year bonds totalling some $800 million and was able to service the debt through a doubling of property assessments over the same time period.(10)

The ability to incur debt, of course, depends upon debt servicing capacity (for both interest and principal). This is where the predictability of finance becomes so important. Were the federal and provincial governments to enact legislation for gas tax transfers, municipalities could issue transit

revenue bonds, the repayment of which would be guaranteed by the 'revenue' derived from these transfers. In other words, guaranteed funding would essentially become 'revenue covenants'.

Debt service for construction of the Confederation Bridge to PEI is one case where the present discounted value of subsidies under the 'Terms of Union' (guaranteed by the federal government) provided the opportunity to fund major new transportation infrastructure. The commitment of charges for the use of airport facilities to servicing debt, is another example of using revenue covenants to fund airport expansion and improvements. In addition, there are other examples of revenue covenants used to fund highway expansion, such as Ontario's Highway 407 Electronic Toll Road.

To place this potential in perspective, consider the recent vehicle tax of $60 per year imposed on residents of Toronto when combined with the federal government gas tax transfer of 2 cents per litre. If the vehicle tax were to be extended to the entire Greater Toronto Area (GTA), and if the provincial government were to guarantee an equal gas tax transfer, the present discounted value, even without indexing, would be about $6 billion. (For purposes of illustration, these calculations are based on 3 million automobiles in the GTA, each consuming, on average, 2,000 litres of fuel per year.)

Such funding, however, can never be guaranteed through *programs,* which, as experience shows, can be announced but not delivered in a timely fashion, or even cancelled. Guarantees that can be taken to financial markets require *legislation*.

To be clear, greater use of conventional financial instruments generates capital more quickly than the conventional annual budgeting process of public sector organizations and governments. At a minimum, however, there is a need to guarantee the funding needed to service these debt instruments through legislation that saves municipalities harmless in the event of discontinuance. (Enhancing such provincial and federal transit legislation by permitting municipalities to issue tax-free transit bonds would also increase the ability to accelerate the entire process for transit infrastructure renewal and expansion.)

5. Conclusions

Most prescriptions for achieving more sustainable urban transportation involve major changes in lifestyles and travel behaviour. At all levels of government, policy makers are increasingly leaning on growth management, intensification, and redevelopment as guidelines for sustainable urban development.

They are also advocating a toolbox of transportation measures that include transit priority, high occupancy vehicle lanes, car-pooling, telecommuting, and even road pricing as a means of reducing the number of single occupant automobiles and total vehicle-km of automobile travel per capita. In addition to these techniques for travel demand management, they are advocating massive investment in transit infrastructure.

If more sustainable urban transportation, however defined, is to be achieved, the arguments presented highlight the crucial role that good governance plays in the delivery of effective solutions. Doing the right things right requires new models of governance in which highly

political executive oversight bodies are replaced by governing boards comprised of individuals with relevant experience and expertise whose fiduciary responsibility is to act in the best interests of the agency.

The paper also emphasizes the need for a return to traditional bottom-up planning process, in which goals and objectives are based on assessments of real problems, needs, costs and benefits, as a substitute for top-down, politically motivated planning.

Finally, the paper treats the matter of finance. Funding programs that must stand the test of the annual municipal, provincial, and federal budget processes are simply inadequate to provide the predictability needed for effective long-term infrastructure planning. Because experience shows that short-term, project-specific infrastructure programs lack continuity, create uncertainty, and alter local priorities, funding initiatives should involve more than simply pleading for more project-specific dollars from the provincial and federal governments.

The paper identifies a number of measures for placing transit finance on a more predictable basis, including a shift from *programs* and *announcements* to transit *legislation* that provides funding guarantees which can be used to service debt as 'revenue covenants' and leverage financial community participation in accelerated transit infrastructure expansion.

Arguments can be made that expectations for some of these major changes in governance practices, the planning process itself, and the predictability of funding, are likely impractical or unrealistic in today's political context or financial environment. But if policy makers are serious about the importance of profound behavioural shifts on the part of the community at large in terms of how they live, work, play, and travel, is there any reason why they also should not be expected to change the manner in which they do business?

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