Financing Capital Expenditures

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ABSTRACT
A city’s capital infrastructure is important to the economic competitiveness of its businesses and the quality of life of its residents. Mature cities, particularly in Canada, face a formidable task in funding their capital expenditures because of the difficulty in balancing their significant capital requirements with limited sources of financing, including those from senior governments. Practical aspects of determining the appropriate level of capital expenditures involve matching needs against affordability, establishing targets and setting priorities, and estimating all costs, including the consumption of capital assets. Current sources of municipal capital financing include reserve funds, transfers of operating funds to capital, dedicated revenues, and traditional debt financing. Although innovative financing methods, such as revenue bonds, zero coupon bonds, and domestic and international leases, are being considered, they require careful planning and/or amendment of provincial statutes. Canadian senior governments could learn from US and European counterparts and provide their cities with sufficient financial assistance and enabling tools in order for the nation to prosper.

KEYWORDS: MUNICIPAL FINANCE ■ DEBT FINANCING ■ INFRASTRUCTURE ■ CAPITAL EXPENDITURES ■ MUNICIPALITIES ■ TORONTO

INTRODUCTION
Financing for expenditures on capital infrastructure is a challenge for Canadian municipalities because, unlike their counterparts in the United States and Europe, they receive limited financial support for such expenditures from senior levels of government. This paper explains why it is important to develop and maintain municipal capital structures, and identifies current sources of financing in Canada, the United States, and Europe. Practical aspects of managing capital spending and financing are reviewed, using the city of Toronto as an example. Finally, various capital financing instruments are discussed, including innovative financing options.

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THE IMPORTANCE OF WELL-MAINTAINED MUNICIPAL CAPITAL INFRASTRUCTURE

The health of Canadian cities is key to the future of the country. Cities are the economic engines and drivers of the nation’s prosperity, and catalysts for growth and innovation. Municipal government is the order of government closest to residents’ daily lives. Services provided by Canada’s 4,000 municipal governments directly influence the environmental, economic, and social factors that define the nature and quality of community life. Depending on the provincial jurisdiction, municipal services may include the following:

1. solid waste collection, disposal, and recycling;
2. emergency services:
   a. policing,
   b. fire, and
   c. ambulance;
3. libraries, parks, and recreation;
4. city planning and development:
   a. licensing,
   b. bylaw enforcement, and
   c. planning and development;
5. water and sewer services;
6. movements of goods and people:
   a. transit and
   b. roads;
7. economic development;
8. arts, culture, and heritage;
9. social and health services:
   a. welfare,
   b. homes for aged,
   c. child care,
   d. hostels,
   e. supportive housing, and
   f. public health.

The capital infrastructure associated with the provision of these services, such as roads, buildings, water and sewer pipes, vehicle fleet, and shelter housing, is generally a municipal responsibility and is significant. For example, according to Transport Canada’s 2000 annual report, 186 percent (or 1.2 million kilometres) of Canada’s 1.4 million kilometres of road network is made up of local streets and rural roads that fall under the jurisdiction of municipalities. The remaining 14 percent consists of about 200,000 kilometres of primary and secondary highways, and major urban and collector roads. The highways are typically under provincial/territorial jurisdiction, and urban and collector roads are typically under municipal/local
control. Consequently, local municipalities are responsible for roughly 90 percent of Canada’s road network, both operationally and financially.

The 2000 State of America’s Cities Survey asked US city officials to identify the priorities to which the federal government and the new presidential administration should devote the most attention and significant resources. The top responses were investing in infrastructure, including roads, transit, water, and sewer (67 percent); and investing in public education and other supports for children, youth, and families (65 percent). Nearly 9 in 10 people said that there was a significant/moderate need for major repair, replacement, and maintenance of road infrastructure in their cities over the next five years. This is followed by the need for major work on their cities’ sewer infrastructure (76 percent), water infrastructure (69 percent), and transit infrastructure (62 percent). If the same survey were to be conducted in Canada, similar responses could be expected.

Failure to maintain a city’s capital infrastructure has serious implications. Neglect or deferral of maintenance on roads can cause deterioration, increase the risk of accidents, and exacerbate the gridlock problem when main traffic routes are closed for construction. If a bridge or a bus does not receive the regular maintenance it requires, health and safety may be jeopardized. When regular maintenance of a building or a vehicle is deferred, the cost of repair and maintenance may be prohibitively high in later years; indeed, if components have deteriorated to the point of being beyond repair, the asset will likely need to be replaced.

Figure 1 illustrates the use of life cycle strategies for major arterial roads. In this model, the roads are rated on a scale of 1 to 10. When a road is built, the rating is at the highest end of the scale. If the rating falls below the resurfacing limit, say, to 5.5, the road requires resurfacing; and if the rating falls below the minimum tolerance level, say, to 3.5, it needs to be reconstructed. The first strategy is to maintain the rating above the resurfacing limit by resurfacing a road after 25 years and 40 years. The second strategy is to do nothing until year 35, when the rating falls to the minimum tolerance level, and then reconstruct the road. The conclusion is that although money can be saved in year 25, the cost in year 35 is significantly higher; and over the long term, say, 70 years, the total cost of resurfacing is lower than the cost of reconstruction. As well, more regular maintenance improves the serviceability of roads, as it does for other assets. The issue boils down to whether one wants to “pay now or pay more later.”

Reinvestment in capital infrastructure can help to improve an organization’s economic competitiveness. For example, a well-maintained vehicle fleet can enhance the organization’s image and help to promote its services or products. At the municipal level, as figure 2 suggests, reinvestment in capital infrastructure such as roads, transit, community centres, and social housing enhances a city’s overall image, making it more economically competitive and improving the quality of life. As an example, the capital reinvestment in Barcelona preceding the 1992 Olympic Games is now reaping benefits for the city and its residents. The most obvious impact is sustained tourism; the number of tourists visiting Barcelona increased from 1.7 million annually in 1991 to 3.1 million in 1995, an 80 percent increase.
CURRENT SOURCES OF MUNICIPAL CAPITAL FUNDING

Contributions by local governments to municipal infrastructure vary greatly among countries, states, and cities. Senior governments and the private sector may also provide municipal capital infrastructure funding. Total municipal capital spending per capita in 1996 varied greatly across Canada, the United States, and Europe, with Canada lagging well behind (in Canadian dollars):4

- Europe (average of 43 countries), $3,150;
- the United States, $2,480; and
- Canada, $1,180.

Canada

In general, Canadian municipalities rely heavily on property taxes as the main funding source for operating and capital expenditures. User charges and senior government funding are important, but provide less support than property taxes. In 2000, property taxes accounted for 50 percent of municipal revenue sources on an aggregate basis in Ontario and 57 percent in the rest of Canada. User charges were approximately 20 percent in Ontario and 23 percent in the rest of Canada, and
senior government grants were approximately 24 percent in Ontario and 12 percent in the rest of Canada. Over the last decade, there has been increased reliance on property taxes and reduced reliance on provincial grants in Ontario as compared with the rest of Canada. \textsuperscript{5} Canadian municipalities are generally vulnerable to decisions by senior levels of government concerning their spending priorities—in particular, transfer payments and conditional grants. For example, before 1998, Toronto received 75 percent of transit capital funding from the provincial government, but such funding was completely eliminated in 1998. It was only recently, in November 2001, that the province reinstated capital transit funding, but only on a cost-shared basis (at one-third), which is much lower than historical amounts.

The Canadian constitution restricts provinces (and municipalities, which are creatures of the provinces) to raising funds through direct taxation. However, some Canadian cities have a limited number of ways, other than property tax revenues, to fund capital infrastructure, including receiving a share of the local income taxes, a share of gasoline taxes, and automotive licence fees:

- \textit{Local income tax}. Manitoba allocates revenues from 2 percent of personal income tax and 1 percent of corporate income tax for distribution to municipalities in the form of a per capita grant.
- \textit{Gasoline/fuel tax}. Several Canadian cities receive a share of gasoline/fuel taxes from their provinces, typically for expenditures on local roads and public
transit. These cities do not set the tax rate; instead, the provinces determine the rate, collect the revenues, and allocate them to the cities. Cities that receive such funding include Montreal (1.5 cents per litre), the Greater Vancouver Regional District (9 cents per litre), Victoria (2.5 cents per litre), and Edmonton and Calgary (5.0 cents per litre initially for the three years ending March 31, 2003).

- **Automotive licence fees.** In Montreal, there is a $30 per car per year vehicle registration fee dedicated to transportation funding.
- **Hotel and motel occupancy tax.** This tax is an additional levy imposed on the existing retail sales tax rate and is currently implemented in Vancouver and Montreal. It is also enabled by legislation in Manitoba.

In 2000, the federal government introduced the infrastructure Canada program in which it committed $2.65 billion over six years to the funding of provincial and municipal capital expenditures ($0.6 billion for provincial highways and $2.05 billion for infrastructure including water, sewer, transportation, and housing). Two programs totalling $125 million were introduced which are complementary to the infrastructure Canada program—the green municipal investment fund and the green municipal enabling fund. (The amount was doubled to $250 million in the federal budget of December 10, 2001.) In a landmark decision, the government of Canada has entered into an agreement with the Federation of Canadian Municipalities to manage the funds, as part of the federal government’s $700 million investment in climate change, clean air, and other green technologies. The December 2001 federal budget included an announcement of a strategic infrastructure fund to which the government is committing a minimum of $2 billion. (This is in addition to the $2.05 billion commitment under the infrastructure Canada program.) The new program will fund large projects such as highways, urban transportation, and sewage treatment systems, and will give special consideration to public-private partnerships. Although these are generally encouraging announcements, municipalities need secure and sustained base funding to facilitate longer-range financial planning and ongoing infrastructure maintenance.

**United States**

US municipal governments draw on a wide array of financing mechanisms, including local income and sales taxes, and greater support from state and federal governments. US cities have access to a much more competitive revenue base than do Canadian cities; that base includes income taxes, sales taxes, and other taxes, as figure 3 shows.

In particular, US transit authorities receive significant capital funding and have a broad base of operating revenues, such as income taxes, sales taxes, gasoline taxes, and other taxes from both the federal and state governments. Table 1 shows the percentage contributions from various funding sources for the largest heavy-rail transit agencies in North America, comparing US agencies with those in Vancouver and Toronto.
In addition, municipal governments in the United States have the power to provide tax incentives to attract private sector investment through mechanisms such as tax-exempt bonds or tax credits to business, and a variety of programs to encourage urban development and redevelopment. In the area of government support, the single largest infrastructure investment program in the United States is the Transportation Equity Act for the 21st Century (“TEA-21”). More than 75 programs make up TEA-21, and a total of $217 billion was allocated over six years (for projects including highways, transit, and rail). This investment is more than 100 times larger than Canada’s infrastructure program ($2.05 billion). The TEA-21 transit allocations to major US cities are as follows:

- San Francisco, $155 million;
- New York, $800 million;
- Seattle, $100 million; and
- Philadelphia, $175 million.

Staff of the Toronto Transit Commission estimated that, if Toronto were a US city, it would be eligible for $290 million in funding in 2001 under this program. Proportionate funding would be available to other Canadian cities.
In Europe, many municipalities receive significant support for infrastructure from the European Union (EU). The stated goal is reduction of regional disparities within the EU. The primary vehicle for infrastructure funding is the European Regional Development Fund (ERDF), whose budget is approximately $260 billion over seven years, making up one-third of the entire EU budget. This fund is intended to co-finance infrastructure with host countries through contributions from local/national governments, the private sector, lottery funds, etc. In addition, within the European G-7 countries, national governments fund 15 to 30 percent of all operating costs, and 30 to 100 percent of capital expenditures on public transportation. Public-private partnerships have been on the rise as a means of financing infrastructure.

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**European Jurisdictions**

Table: Percentage Contribution of Funding for Heavy-Rail Transit Agencies in the United States and Systems in Toronto and Vancouver

<table>
<thead>
<tr>
<th>Transit system</th>
<th>Sources of operating funds</th>
<th></th>
<th>Sources of capital funding</th>
<th></th>
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</thead>
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<tr>
<td></td>
<td>Passenger fare</td>
<td>State/</td>
<td>Local</td>
<td>Other</td>
</tr>
<tr>
<td>Atlanta MARTA</td>
<td>28</td>
<td>10</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Baltimore MTA</td>
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<td>0</td>
<td>63</td>
<td>0</td>
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<td>0</td>
<td>51</td>
<td>18</td>
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<tr>
<td>Chicago CTA</td>
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<td>20</td>
<td>29</td>
</tr>
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<td>Cleveland RTA</td>
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<td>2</td>
<td>73</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>Metro</td>
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<td>6</td>
<td>2</td>
</tr>
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<td></td>
<td>Miami MDTA</td>
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<td>7</td>
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<tr>
<td></td>
<td>NYCTA</td>
<td>63</td>
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<td>20</td>
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<tr>
<td></td>
<td>Philadelphia</td>
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<td>4</td>
<td>46</td>
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<tr>
<td></td>
<td>San Francisco</td>
<td>55</td>
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<td></td>
<td>Washington</td>
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<td></td>
<td>Toronto TTC</td>
<td>81</td>
<td>0</td>
<td>19</td>
</tr>
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* a Included in passenger fares as directly generated funds.

In France, taxing power is provided to municipalities for transportation in the form of a “national transport contribution” tax, whereby employers with more than nine employees pay a fixed 1.75 percent of wages as a tax in support of urban public transport. In Germany, state governments distribute 15 percent of the national income tax to local governments where the taxpayer resides.

The EU has placed special emphasis on environmental standards in its commitment to sustainable cities. The largest source of funding is the EU cohesion fund, which supports investment in environment and transportation in the four least prosperous states (Spain, Greece, Ireland, and Portugal) at a rate of 80 to 85 percent of the approved costs. Supplemental funding is available from other sources, such as the ERDF.

These examples represent the commitment of national governments in Europe and the United States to cities within their jurisdiction. Through less restrictive financing rules and the participation of senior levels of government, local governments are able to gain a competitive edge over cities in countries that fail to match these investments.

PRACTICAL ASPECTS OF MANAGING CAPITAL SPENDING AND FINANCING

Capital spending cannot be managed in isolation but must be integrated with the operation of the entire organization. A balance needs to be struck among three components: physical and financial resources, revenues and expenditures, and service delivery/employees, as shown in figure 4.

The safekeeping and rate of consumption of physical and financial resources (assets and liabilities, including physical infrastructure, debt, unfunded liabilities, and reserves) have an impact on an organization’s revenues and expenditures. By analogy, the more a vehicle is used, the faster it is worn out through wear and tear, the higher the repair and maintenance costs will be, and the lower the level of service that will be provided through more frequent repairs. In the context of a municipal organization, decisions on staffing levels and compensation, service levels, and service standards affect expenditure requirements; typically, the higher these levels and standards, the higher the expenditures will be. Service level requirements will also affect the consumption of assets and liabilities. One example is garbage collection. A requirement to increase the frequency of garbage pickup will increase the use of waste collection trucks, thereby increasing the rate of depletion of the assets. As another example, any changes in employee benefits, such as retirement benefits, may have an impact on a municipality’s liabilities and, therefore, on requirements for annual reserve contributions, which are operating expenditures.

The Need To Measure Consumption of Assets

Organizations in the public sector have traditionally focused on cash income and expenses; they have not paid much attention to the value of capital assets and their consumption, because, as tax-free entities, they are not required to provide this
information for tax reporting purposes. Capital spending or the value of assets purchased in any given year is usually expensed in that year. The alternative treatment is to recognize asset values as capital items and depreciate the value over the life of the asset. The latter approach provides a better matching of the consumption of assets with the costs recorded on the books. Depreciation is a non-cash item, but if money equivalent to the depreciation amount is set aside every year over the life of the asset, there will be enough money saved after the asset is completely depreciated to cover the cost of replacing it. The Canadian Institute of Chartered Accountants (CICA) establishes accounting and reporting standards for both the public and private sectors. Although standards for recognition, valuation, and depreciation of capital assets have long been established and implemented for businesses, governments have only recently begun to work on these standards. The Public Sector Accounting Board (PSAB) of the CICA just released an exposure draft on “Government Reporting Model—Senior Government” in early 2002. As well, the PSAB is expected to start a new project in 2002 on Accounting for Capital Assets by Local Governments, which will consider such issues as the definition of a capital asset, recognition, measurement (including cost, amortization, writedowns, and disposals), disclosure, and transitional provisions. The project will consider how this information is presented in the financial statements.

Taking Ontario as an example, few (if any) municipalities recover all capital and operating costs for water and wastewater services through user charges. The capital costs of underground pipes are usually out of sight, and therefore out of mind. People in Ontario typically pay less for their drinking water than people in other member countries of the Organisation for Economic Co-operation and Development. On December 12, 2001, the Ontario government introduced the Sustainable Water and Sewage Systems Act 2001. If passed, the legislation will require water and
sewer system owners—mainly municipalities—to undertake a full accounting of the costs associated with delivering water and sewer services, including all operating and capital costs, all sources of revenue, and the investment required. This reporting requirement will disclose to the public the true cost of providing this service and will help municipalities in developing strategies to ensure that their water systems are sustainable. Such strategies will also provide greater certainty for municipalities on the question of how they will finance infrastructure costs. All municipalities will be required to prepare reports for the province, detailing an inventory of their water and sewer facilities and any upgrades needed. They will be required to outline the full costs in providing the services and revenues to be obtained, as well as cost-recovery plans explaining how they intend to pay the full costs of providing water and sewer services. Huge investments are required to meet future needs, as the example in figure 5 for the city of Toronto shows.

**Determining Capital Needs**

How are capital needs determined? There are several approaches and considerations:

1. *Life cycle analysis.* As discussed previously in relation to road reconstruction and resurfacing, life cycle analyses are typically used in determining physical needs for assets with a clearly defined life span.

2. *Demand analysis.* In addition to life cycle considerations, capital needs are affected by community demand. Changes in demand may result from a combination of factors, including:
   a. changing demographics, which may create the need for more homes for the aged for the aging population or more child-care facilities to serve communities with more young families;
   b. growth-related expansion, which may require the building of more housing and roads, more transit vehicles, and more community centres, parks, and arenas; and
   c. land-use initiatives, such as the $12 billion waterfront revitalization project in Toronto, which calls for the construction of community facilities, local parks, and affordable housing on 800 hectares of waterfront land.

3. *All-in capital plans.* All-in capital plans provide the basis for full funding of capital costs. For a multiyear municipal capital project, a complete analysis should consider all current-year and future-year costs, and all program costs (if multiple program areas are involved). For example, a capital plan for a new community centre to be constructed on undeveloped vacant land should include all costs for infrastructure, such as new water and sewer pipes, local roads, traffic signs, and possibly parks and recreational facilities. If the project is debt-financed, the debt service costs also should be taken into account. A typical example is the water and wastewater program described in the previous section, in which the rates charged to users should be based on all revenues and expenditures, including capital and operating costs and capital financing costs.
4. **Capital maintenance standards.** Capital maintenance standards are important in determining when an asset will need to be repaired or replaced, and thus in anticipating changes in cost requirements. Effective capital management should take into account differences in rates of use. For example, main traffic routes in a large urban area will need to be resurfaced and rebuilt more frequently than less heavily used roads.

5. **Changes in other standards.** An example of this factor is a change in truck load standards, which will affect road and bridge loading standards.

6. **Capital needs in mature versus growing municipalities.** Much of the capital infrastructure in mature municipalities is older than that in more recently established and growing communities. In the city of Toronto, for example, more than 60 percent of the road system is over 30 years old. Although older infrastructure is more costly to maintain, mature municipalities do not have the property assessment growth that is available to growing municipalities to fund the necessary repairs. As well, growing municipalities are often able to rely heavily on development charge funding to a much greater degree than mature municipalities to support ongoing maintenance and rehabilitation.

**Assessing Capital Affordability and Longer-Term Debt Plans**

When capital needs are determined, it is important to balance affordability against needs to produce a capital financing plan that will sustain capital projects over the long term. The following is a list of possible sustainable municipal funding sources:
1. **External funds.** Examples include ongoing grants from senior levels of government and private sector contributions (for instance, through public-private partnerships).

2. **Direct contributions to capital from operating funds** (“pay-as-you-go”). Funds can be transferred from the operating budget to pay for capital expenditures. In cities where property tax is the main own-source revenue, this funding alternative is equivalent to the imposition of tax to pay for capital requirements in the year in which the expenditures are incurred.

3. **Sustainable reserve funding.** Reserve funding is an important financing tool for municipalities. In Ontario, as in most jurisdictions, municipalities cannot legally budget a deficit; consequently, funds must be set aside to provide for a proverbial “rainy day.” Municipalities often accumulate funds in reserves, through annual contributions, in anticipation of expenditures on high-cost items such as buildings, vehicles, and equipment. The key is to have a sustainable funding strategy for these capital reserve funds so that adequate amounts can be built up.

4. **Debt.** Debt financing is not uncommon for capital expenditures. Municipalities can issue debentures to support their capital but not to fund operating expenditures. Typically, both principal and interest are repaid over a period not to exceed the useful life of the capital project or the physical asset. The reason is that the benefit from the asset should help to offset funding of that asset over time.

5. **Other revenues.** Municipalities can sometimes augment capital financing through one-time opportunities, such as the sale of surplus properties. This funding alternative is suitable for non-recurring capital projects, such as Y2K (Year 2000) or transitional projects. However, it is not sustainable, and longer-term funding sources need to be identified for ongoing capital requirements.

Figure 6 depicts the conceptual relationship between capital needs and sustainable base funding, using the city of Toronto as an example. The shortfall between capital needs and sustainable base funding (including baseline debt, reserve funding, and direct operating contributions) becomes the new debt requirement. The baseline debt is the average debt level that matures in a year and can be replaced without incurring additional debt service costs.

**Establishing Program Capital Targets and Setting Priorities**

The following is the sequence of steps that can be taken to establish program capital targets and set priorities:

1. **Matching capital needs with capital affordability.** As described above, capital needs and affordability have to be balanced and matched.

2. **Broad priority setting within annual fixed targets.** Where a number of capital projects with demonstrated needs are competing for limited resources, they...
need to be prioritized. As an illustration, in the 2002 capital budget process, the city of Toronto prioritized capital projects into the following prescribed categories: health and safety, legislated by senior levels of government, state of good repair (major maintenance), service improvement and enhancement, and growth-related. The city’s 2002 focus was on the first three categories. Within each category, the city used the model in Table 2 as a prioritization tool.

Under the first criterion, “project classification,” there are four main categories:

a. **Essential.** The project is required to acquire, initialize, replace, or rehabilitate required facilities or equipment and/or address health and safety concerns. The impact of non-implementation is impairment or discontinuation of service to public.

b. **Necessary.** The project is required to increase utility and/or efficiency of operation or equipment. The project provides timely intervention to preclude the need for total replacement or rehabilitation and increases the projected life of the asset.

c. **Cost reduction.** The project will lead to directly identifiable reduced operating costs.
d. Non-essential. The project is required to improve appearance/convenience or facilitate public/staff relations.

In this particular example, projects are scored according to the above model and sorted in priority order. Projects that are low on the priority list and require funding beyond what is available in the current year are to be deferred.

3. State of good repair versus expansion. Another major issue when deciding on the allocation of limited resources is whether the emphasis should be put on the state of good repair or expansion. Multiyear capital budgets should reflect program requirements to bring assets to the state of good repair. As an illustration, the Toronto Transit Commission has implemented a state of good repair program for ongoing asset maintenance. At the same time, ridership growth since the late 1990s has created pressure for expansion of the system, through new bus routes, extension of subway lines, etc. The issue is how to strike a balance between the two areas of demand.

4. Matching of funding with expenditure types. To simplify the capital financing process, one-time revenue sources should be matched to unique and non-recurring capital projects, while sustainable ongoing funding should be matched to long-term capital projects.

### Linking Capital and Operating Budgets

Business case analyses should be used for all capital initiatives to justify expenditures. Direct and indirect impacts of capital programs on the operating budget must be projected and realized. For example, there is no point in building a new community centre if there is no provision in the operating budget for the hiring of staff for the centre. It is recommended that post-implementation reviews be completed to ensure that the investments are appropriate and justified.

### Managing the Credit-Rating Process

If capital projects are to be debt-financed, a municipality will need to consider its credit ratings. Ratings directly affect debt financing costs (interest rates). At the
same time, ratings reflect the municipality’s reputation, which in turn affects its competitiveness in accessing market funds. It is important that the credit-rating process be managed properly. Formal, detailed presentation and full disclosure are recommended. When dealing with credit-rating agencies (for example, the Dominion Bond Rating Service, Standard and Poors, Moody’s Investors Services, and Fitch), the municipality can help to build the relationship through ongoing communication of financial and other events.

**CAPITAL FINANCING INSTRUMENTS**

Because of generally limited financial support from senior governments for capital expenditures, Canadian municipalities have to explore new capital financing instruments. In the following section, five categories of instruments are discussed:

1. non-debt financing,
2. traditional debt financing,
3. “new” debt financing,
4. innovative financing, and
5. other potential funding options.

**Non-Debt Financing**

**Reserve Funding**

When a payment schedule is anticipated to pay for a large capital project over a number of years, capital reserves or reserve funds are usually created to fund the project costs. The funding strategy of these capital reserves can be tied to the analysis of capital asset consumption. This approach has the benefit of improving the balance sheet. Figure 7 is an example how a capital reserve may be used in relation to a 20-year project. Varying repair and maintenance expenditures are expected in years 5, 8, 10, 12, 15, 18, and 20. Instead of directly funding these from current-year resources, the municipality sets aside a fixed amount of money each year, which is contributed to the capital reserve, and the total contribution matches the total capital requirement. Funds required to pay for the repair and maintenance expenditures are then withdrawn from the reserve in the years of expenditure, so that expenditures are smoothed out over the 20-year period.

**Pay-As-You-Go/Direct Operating Contributions**

The transfer of funds from the operating budget into the capital fund is the preferred form of own-source funding for repeated annual expenditures and maintenance expenditures that either are stable or increase slowly over a period of time. As the resources are provided for in the municipality’s operating budget, they are paid for from property taxes and directly affect property tax rates.

There is a rule of thumb in making a choice between using pay-as-you-go and debt financing. The “six-year rule” says that for sustained capital expenditures, pay-as-you-go financing will be less costly than use of 10-year debentures each
year. For example, continuous use of $1 million in pay-as-you-go financing will avoid over $1 million in accumulated debt charges after 6 years and about $1.5 million in annual debt charges after 10 years.

**Dedicated Revenues**

**Development Charges**

Intended to assist municipalities in financing infrastructure development, development charges give municipalities the power to recover a portion of growth-related infrastructure costs from developers. Development charges are based on capital expenditure plans, service levels, and existing capacity, and are to be paid by developers per unit of construction. Especially in fast-growth communities, development charges are a major source of capital funding.

**Fees**

User fees are important in financing water and sewer infrastructure. As discussed above, Ontario is moving toward requiring municipalities to fully account for and recover costs of providing water and sewer services from user charges and other revenue sources. This change will undoubtedly result in increases in water and sewer rates, but it will recognize the ongoing consumption of capital assets. Similarly, as in the private sector, some culture venues such as theatres impose a surcharge on ticket prices to build capital funds.
Other non-debt capital financing tools include investment returns (dividend and interest incomes) from a municipality’s subsidiaries. Toronto Hydro, a subsidiary of the city of Toronto, is expected to generate a constant stream of investment return to the city, which is applied against the city’s capital requirements. Toronto has also used the surpluses from parking operations to the same end.

Traditional Debt Financing
All levels of government rely on debt to varying degrees. Figure 8 shows that while the federal and Ontario governments have benefited from economic growth and hence higher tax revenues of the late 1990s, which have resulted in controlled debt levels, the city of Toronto’s debt levels are expected to escalate as the city struggles to maintain its infrastructure with insufficient senior government funding support.

Municipal debt is different from senior government debt in the sense that municipal debt is

- not permitted for operating expenditures in Ontario and elsewhere;
- the preferred form of financing for infrequent requirements, growth-related expenditures, and expenditures at the margin; and
- fully funded—for example, the contribution of the principal component into a sinking fund ensures full retirement of the debt at maturity. By comparison, senior governments fund only the interest portion of their accumulated debt and make principal repayments only when they generate operating surpluses.

One of the most common types of debt is the “plain vanilla” or general obligation debenture, which is secured not against any particular asset but against all assets of the organization. It is popular because

- it usually has lower interest rates than those secured against a particular asset;
- debt charges are “flat,” in that once the debt has been issued, the interest rate does not fluctuate over the term of the debt; and
- there is a broad capital market for trading.

When a municipality is considering debt financing, it must take into account the following factors:

- Statutory limits. In Ontario, the provincial government sets through regulation the annual repayment limit at the end of each year, which determines the maximum amount by which a municipality may increase its expenditure on debt and financial obligations in the following year. The limit is currently 25 percent of a municipality’s “net revenue fund revenue.” Other provinces set limits with a similar purpose.
- Competitiveness. Municipalities are in direct competition with each other in accessing financial markets. As stated above, credit ratings are important in
affecting the costs of debt. When a municipality has a relatively high debt load, its credit rating will be negatively affected. When the municipality wishes to borrow more, it must pay a higher interest rate and a higher debt service charge. Since debt service charges are paid for by property taxes, the financial outlook is again negatively affected, and so the vicious circle goes on.

- **Internal guideline.** City councils of individual municipalities may impose restrictions on debt or debt service levels. In 1999, the city of Toronto implemented a debt service guideline stating that debt service charges should not exceed 10 percent of property tax revenues in a given year. Although only a guideline, this limit means that 90 cents on each tax dollar raised is available for operating purposes. Figure 9 illustrates the relationship between debt service charges and property taxes.

Interest rates in Canada and the United States have recently dropped to the lowest in more than 40 years (figure 10). There is no better time to borrow money. Likewise, in this falling interest rate environment, municipalities can borrow more without incurring additional debt service charges, and they can leverage more capital maintenance funding, thereby catching up on deferred maintenance.
“New” Debt Financing

In addition to traditional debentures, other debt instruments have emerged in the private sector, which have attracted interest among municipalities. Several of these instruments are discussed below.

**Revenue Bonds**

Revenue bonds are secured solely by specific revenue sources; for example, a highway revenue bond is secured by toll revenues. Revenue bonds are therefore different from general obligation bonds, which are secured by the full faith and credit of the issuer. They are appropriate for project-based financing where the issuer desires non-recourse credit. One of the key features of revenue bonds is that they require a separate legal entity, such as a municipal corporation, which may provide investor comfort and project accountability.

1. **Advantages of revenue bonds**
   a. They provide an objective market test to endorse the commercial viability of the project.
   b. They promote full-cost pricing and public acceptance of these prices.
   c. They can be used in projects where a municipality wants to go “halfway” (that is, in a public-private partnership).
d. They transfer economic risks of operation to investors without loss of ownership and control.

e. They may have a favourable impact on a municipality’s current credit rating, in the sense that the debt and the associated risks are moved to another separately rated entity.

f. They capitalize on the advantages of user fees over taxation:
   i. fees generated go directly to project/enterprise expenses;
   ii. fees eliminate or reduce subsidization of certain services; and
   iii. fees encourage demand management and efficient allocation of resources.

2. Disadvantages of revenue bonds
   a. The public may be resistant to user fees for any particular service.
   b. Costs may be higher for both financing (because of higher interest rates generally) and administration (because of their complex nature).
   c. Revenue bonds are administratively more complex than a general obligation bond (involving, for example, a public authority, separate credit rating, feasibility study, etc.).
   d. There may be market confusion over the difference between revenue bonds and general obligation bonds.
e. The Canadian market is not well developed, and it may be difficult to issue revenue bonds owing to limited market access.

**Zero Coupon Bonds**

A zero coupon bond pays no interest; instead, it is sold at a discount and redeemed at maturity at par. Since there is no regular interest payment, the costs of funding with zero coupon bonds are incurred only at the end of the term; therefore, a municipality can gain access to funds for capital projects without incurring immediate funding pressures. Zero coupon bonds provide flexibility in the matching of cash flows and financing costs. A typical use of this method is in construction financing. Interest and principal are deferred throughout the construction period, until the project is operational and generates revenue.

**Recent Ontario Legislative Initiatives**

The new Ontario Municipal Act, passed in December 2001 and coming into effect on January 1, 2003, will give municipalities access to a broader range of debt instruments. Table 3 summarizes the key financing tools that are addressed directly in the new Municipal Act or are expected to be addressed by regulations in the coming year.

**Innovative Financing**

**Domestic Leases**

The Ontario Municipal Act allows municipalities to enter into leases and sale/leaseback agreements for the provision of municipal and school capital facilities. Municipal governments are not eligible for tax benefits from capital cost allowance. The feasibility of a lease arrangement depends on a municipality’s cost of money. A lease may be appropriate for funding:

- equipment with a short life span;
- an automotive fleet, to take advantage of competitive pricing; and
- facilities, to address short-term needs.

Before entering into a lease, the municipality should consider the following issues:

- the need for full analysis; and
- the need for disclosure of critical information, such as a repayment schedule set out in numerical form and implicit interest rates to allow the municipality to compare the cost of a lease arrangement with that of debenture or internal financing, for example, reserve funding.

**International Leases**

In an international sale-leaseback arrangement, foreign investors share tax benefits from capital cost allowance and deductibility of interest for tax purposes with the
Canadian municipality. The city of Toronto has been reviewing the feasibility of a US cross-border lease for 368 subway cars of the Toronto Transit Commission. Compared to the use of the traditional debenture method, the benefit of such a cross-border lease would be a reduction of financing costs equal to 4 to 8 percent of the value of the transaction (estimated to be more than $40 million on a total asset value of approximately $850 million). Before entering into an international lease, a municipality should consider the following implications:

1. the need for independent financial and legal advice;
2. the need for full and complete disclosure of terms, interest rates, and total liability;
3. legislative issues, including
   a. relief from the doubling of provincial and federal sales taxes on the purchase price and lease payments of assets being acquired, and
   b. ability to manage foreign exchange exposures.
   (In Ontario, it is expected that the regulations under the new Municipal Act will address the second issue.)

Other Potential Funding Options

Highway electronic tolling is a user charge that may be used to support transportation capital. Other targeted user charges could be used to fund capital requirements, depending upon legislative frameworks and public acceptability in various provinces.

CONCLUSION

Well-maintained municipal capital infrastructure is vital to a municipality’s economic competitiveness and its residents’ quality of life. In many instances, the capital infrastructure is deteriorating because of underfunding and a restricted revenue base. Lessons can be learned from the United States and Europe, where senior levels of government provide very significant funding to support municipal capital infrastructure. Innovative financing tools are necessary to obtain funds at the lowest cost. In addition, senior governments must recognize the importance of municipalities as the economic engine and drivers of national and provincial prosperity. They need to make more effort through legislative changes, or by providing
direct assistance, to enable municipalities to prosper. There are some positive early signs in Ontario, where partial return of transit funding and more flexible funding tools have recently been announced.

**NOTES**


4. In this article, the US currency exchange rate is assumed to be 0.667.


8. Supra note 3.
