

6. FINANCING STRATEGY

6.1 INTRODUCTION

A financial plan is a key component for integrating asset management planning with financial planning and budgeting, and to make full use of all available infrastructure financing tools. As such, the financing strategy outlines the approach the City has taken to ensure adequate funding is available to carry out the asset management strategies outlined in the previous chapters.

The long-term financial strategy for both expenditures and revenue sources is consistent with the City's budget structure. Assets, excluding water and wastewater infrastructure, are included in the City's Life Cycle Replacement and Capital Reserve Study, a detailed 25-year plan. The Reserve Study is updated annually to ensure adequate funding is available for the rehabilitation and replacement of the City's existing assets. The maintenance activities for these assets are identified in the multi-year operating budget forecast.

The long-term financial strategy for water and wastewater assets is included in the City's Water and Wastewater Reserve Study, a detailed 25-year plan updated annually to ensure adequate funding is available for the operation and maintenance of the system, and the rehabilitation and replacement of the City's existing assets.

Expansion activities are identified in the City's Development Charges Background Study. The Study includes a capital forecast of 10 years for soft services, such as recreation and library facilities, fire services, and parks, and a forecast to buildout (2031) for engineered services, such as roads, sidewalks, and bridges.

This chapter of the Asset Management Plan includes:

- Summary of the City's current financial strategies;
- Impact of funding shortfalls;
- Alternative strategies for managing those impacts;
- Historic revenue and expenditures; and
- Annual forecast of revenues and expenditures.

6.2 FINANCIAL STRATEGIES

A new asset at the beginning of its life cycle, may be eligible to be financed through Development Charges. However, rehabilitation requirements partway through an asset's life cycle, and the replacement of the asset at the end of its life cycle, must be funded through other means. Therefore, the City utilizes various financing tools to support its asset management plan based on the type of asset, and the stage of an asset's life cycle, from emplacement to maintenance, and eventual replacement.

6.2.1 Development Charges

The City utilizes Development Charges to fund capital projects related to growth throughout Markham so that development pays for its capital requirements to the extent allowed by the Development Charges Act. This ensures that additional services required by growth are provided in a fiscally responsible manner.

The City currently levies three types of Development Charges for the recovery of development-related capital costs:

- **City Wide Soft (CWS) Service Development Charges** — for the recovery of development-related costs for the provision of general government, library, fire, indoor recreation, parks development and facilities, public works (building, equipment and fleet), and parking services.
- **City Wide Hard (CWH) Service Development Charges** — for the recovery of development-related costs for the provision of major roads and related services, including structures, sidewalks, streetlights and special traffic management and design features, as well as stormwater management projects (erosion control projects), special projects (streetscaping), and related studies.
- **Area Specific Development Charges (ASDC)** — for the recovery of development-related costs for the provision of some roads, intersection improvements, streetlighting, watermains, sanitary sewers, stormwater management facilities (stormwater ponds), and related studies.

In accordance with the Development Charges Act, CWS Development Charges have been calculated at a level no higher than the average service level provided in the City over the ten-year period immediately preceding the preparation of the background study, on a service-by-service basis.

The By-laws governing the Development Charges rates must be revisited at least every five years, ensuring adequate financing of expansion activities to maintain service levels are recovered.

6.2.2 Life Cycle Replacement and Capital Reserve Study

The City implemented its Life Cycle Replacement and Capital Reserve Study in 2004. The purpose of the reserve study was to address the on-going capital replacements and preventative maintenance of capital assets over their useful lives.

The reserve study uses a rolling 25-year planning horizon. The reserve study is updated annually to identify if there is adequate funding in the reserve based on projected inflows and outflows to sustain future rehabilitation and replacement requirements of the City's existing assets for the next 25 years. For example, the update for 2020 applies to a forecast period of 2021-2045, and the update for 2021 would apply to the period 2022-2046. The use of a rolling 25-year planning horizon provides a number of key benefits to the City's asset management strategy. This allows the City to adapt to changes in asset management practices or asset useful life assumptions. Also, positive reserve balances are invested to generate returns in order to offset the effects of inflation.

The inflows to the Life Cycle Replacement and Capital Reserve include annual contributions from the operating budget, interest and dividends earned from investments, and Canada Community Building Fund.

It is projected that each year \$2M of Canada Community Building Fund will be allocated to the Stormwater Fee Reserve and \$8M to fund incremental life cycle projects, of which \$4M is transferred to fund the non-growth portion of the growth-related projects.

Although the replacement values of assets summarized in the State of the Infrastructure chapter provide a good measure of the quantum of the City's assets, it is not the basis for calculating the future asset rehabilitation and replacement funding requirement over the planning period. The timing and amount of outflows from the Life Cycle Replacement and Capital

Reserve are identified through development of a long-term rehabilitation and replacement program based on the City's asset management strategies. The outflows include the cost of periodic rehabilitation, and required replacements of the City's assets over the 25 year planning period. To estimate the future cost of rehabilitation or replacement of an asset, the current value of this activity is inflated at an assumed rate of inflation.

A cash flow analysis of the projected inflows and outflows of the Life Cycle Replacement and Capital Reserve is used to determine the adequacy of the reserve over the 25-year planning horizon. The analysis targets available funding at the time of rehabilitation and replacements, and a revenue neutral position for the reserve at the end of the planning period. If the analysis identifies a shortfall, then the necessary steps are taken to address it, either by increasing the transfer to the reserve or finding mitigating strategies to reduce outflows from the reserve.

6.2.3 User Fee Supported – Water and Wastewater Reserve Study

The City implemented the Water and Wastewater Reserve Study in 2007 with the purpose of addressing the ongoing replacement and rehabilitation requirements for Waterworks infrastructure and other Waterworks related capital assets, such as Fleet, Facilities and ITS infrastructure, over their useful lives.

The Reserve Study is updated annually to establish the water and wastewater rate. The rate revenues ensure that there is adequate funding in the Water and Wastewater Reserve to sustain future replacement and rehabilitation requirements of the City's water and wastewater infrastructure for the next 25 years. Rate revenues also finance the operation and maintenance activities of the water and wastewater systems. The approach is the same as that implemented in the Life Cycle Replacement and Capital Reserve Study.

The water and wastewater system is self-funded. As such, the sources for annual contributions to the Water and Wastewater Reserve are user rate revenues, revenues from water system related fees, and interest earned on the reserve balance. The water and wastewater rates are reviewed annually and rate adjustments are applied as necessary to ensure adequate funding is available.

6.2.4 Funding Shortfall

Assets with useful lives beyond the study period

Currently, the financing strategies only account for assets due for replacement in the coming 25-year period. Therefore, provisions for rehabilitation or replacement are only made once the scheduled rehabilitation or replacement is within the 25-year period.

Growth-related assets not in service at time of study update

It is estimated that the City's asset base will grow by approximately \$80M per year until build-out (currently forecasted to be 2031) through capital projects and the assumption of subdivision internal works. Although some of these assets are infrastructure with life cycle's greater than 25 years, there are assets that require funding within the 25-year period after its initial purchase or assumption, creating a funding shortfall. However, since the Reserve forecast is updated on an annual basis, mitigating strategies can be identified to close the gap.

Infrastructure Funding Gap

It is forecasted that every year the Reserve forecast is updated, there will be a funding shortfall due to new assets being constructed and assumed, as well as accounting for inflation and replacement of assets that were previously outside of the 25-year planning horizon.

Markham will continue to seek out sustainable ways to mitigate the forecasted infrastructure funding gaps to reduce the impact on Markham taxpayers. Potential methods of closing the funding gap are to reduce replacement/rehabilitation costs, extend the life cycles of assets, new technology and to identify new revenue opportunities. This may involve trying to get increased levels of Canada Community Building Fund and/or improved legislative powers from the Province.

Staff will continue to work with Council to develop a phased approach to reduce the future infrastructure funding gaps.

Assets not yet fully addressed

The City has identified assets that may require additional funding in the future. Some asset categories are managed through annual programs. Annual programs forecast a funding requirement for the group of assets rather than the individual assets within the asset category. The annual programs have identified sufficient funding is available for the next 25 years. The sufficiency of annual programs beyond 25 years is currently being assessed.

Projects related to watercourse management implementation for 13 watercourses are estimated to require \$13.5M to undertake. However, the need to conduct the remediation work is fully dependent on future development.

Flood control program

Markham's Flood Control Program, initiated in 2015, is a long-term, City-wide initiative to improve storm drainage capacity and limit surface and basement flooding risks in urban areas. These flood control improvements will be primarily funded through a Stormwater Fee, and charged to all property owners, residential and non-residential. This fee, combined with funds from the Canada Community Building Fund, will provide dedicated funds for both approved and future storm infrastructure improvement projects Citywide. The current allocation of Canada Community Building Fund totals \$2M per year. The program's financial sustainability is reviewed and updated every five years.

6.2.5 Alternative Scenarios

Alternative Funding Strategies

Markham is a growing City and builds or assumes approximately \$80M of new assets per year. This translates into approximately \$30M to \$35M of repair/rehabilitation/replacement work needing to be performed over the next 25 years. The City is currently in the process of identifying the future replacement requirements and the funding implications for assets with useful lives greater than 25 years that are currently outside the 25-year period.

Pay as you Go

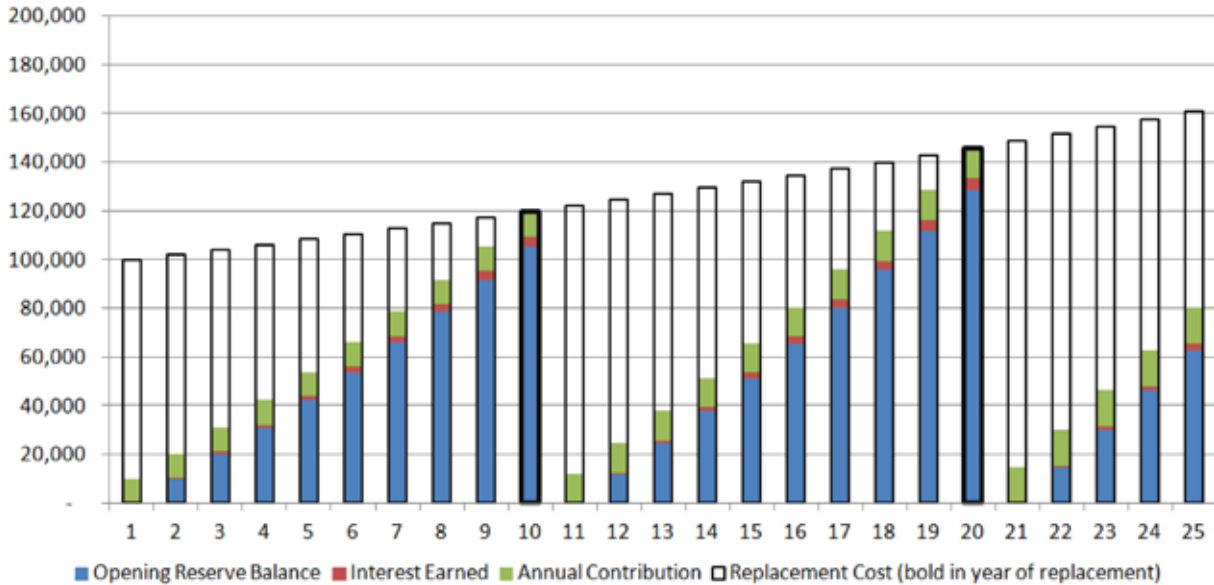
One alternative strategy that the City has considered is whereby the full contribution from taxpayers is collected in the year of replacement of the asset, there is no accumulation of reserve funding for future replacements. This strategy is considered to be more risky as it's subject to greater fluctuations year over year, with greater financial burden being placed on future taxpayers and the City may need to borrow additional funds in order to meet the asset replacement requirements in future years.

Fully Funding Amortization

The City is also currently reviewing alternative approaches for determining and ensuring reserve fund adequacy. One such approach is to calculate the required provisions for the funding of future rehabilitation and replacements using an annual contribution methodology. To estimate the future cost of rehabilitation and/or replacement of an asset, the current value of this activity is inflated at an assumed rate of inflation. To ensure adequate funds are available at the time of rehabilitation or replacement of an asset, a calculation is then performed to determine an even annual contribution which, when invested in a reserve fund will increase to match the future cost of rehabilitation or replacement.

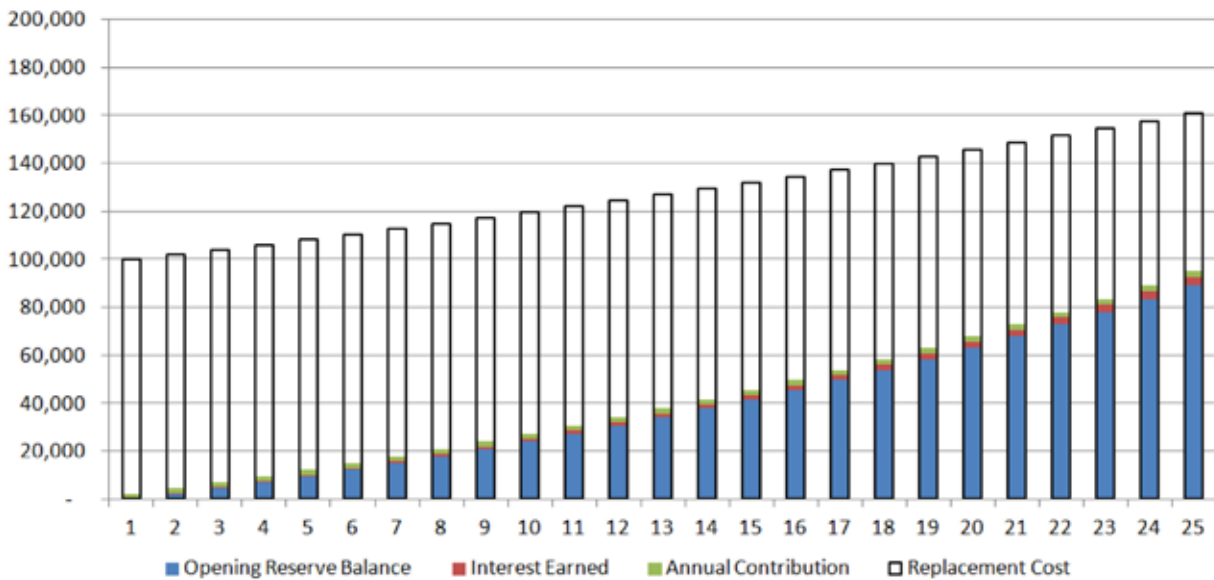
The following graph illustrates the alternative approach considered for the Life Cycle Replacement and Capital Reserve Study, and Water and Wastewater Reserve Study. This example is for a single asset with a 10-year life cycle and a current replacement value of \$100,000. In this example, an annual rate of two per cent for inflation and four per cent for investment earnings is assumed.

Annual Contribution Approach
\$100,000 asset with 10-year useful life



The example illustrates over the next 25 years, the asset will need to be replaced twice. Although the cost to initially replace the asset is \$100,000, the replacement cost inflates to approximately \$120,000 by the end of the first asset life cycle, and to more than \$145,000 by the time the asset is due for its second replacement. Despite the increase in replacement cost, planning for these replacements allows for even annual contributions to the reserve (as represented by the green bar segments), and ensures adequate funds are available as the asset comes due for replacement. The future cost of rehabilitation and replacements are accrued over the asset’s useful life. In the example, annual contributions are made for one half of the asset’s third life cycle replacement, even though the third replacement does not occur in the 25-year planning period. Similarly, annual contributions are accrued for assets with useful lives greater than the 25-year planning period as outlined in the following graph. This example is for a single asset with a 40-year life cycle and a current replacement value of \$100,000. The future replacement cost of this asset is estimated to be about \$216,000 based on an annual rate of two per cent for inflation. Again, a four per cent investment earnings rate is assumed.

Annual Contribution Approach
\$100,000 asset with 40-year useful life



Fluctuations in capital expenditures are unavoidable due to the differences in useful lives and costs of asset rehabilitation and replacement. Using the annual contribution approach assists in identifying the requirement of a stable funding source, while reducing spikes in revenue requirements due to fluctuations in capital expenditures.

Markham’s 25-Year Approach

Markham’s approach as stated previously is to ensure sufficient funds are in the reserve study for infrastructure rehabilitation and replacement requirements within the next 25 years. In other words, the City begins collecting for the funds once the replacement requirement falls within the 25-year window. This provides a better balance between placing the funding burden on current and future taxpayers.

Excellence through Efficiency & Effectiveness (E3) – Capital

In 2008, the City launched an initiative – “Excellence through Efficiency & Effectiveness” (E3) – with the objective of developing and implementing a sustainable process to deliver the lowest possible tax rate increases. The E3 initiative involved a corporate-wide business transformation through the review of services to find efficiencies to either maximize revenue opportunities or reduce expenditures, without reducing levels of service. To date, the City has been successful in finding efficiencies through the operating budget amounting to \$29M. Moving forward, a greater focus on the capital and asset management opportunities will be relied upon to reduce funding requirements.

6.3 FINANCIAL MANAGEMENT

6.3.1 Historical Financial Data

The following table outlines the historical maintenance/non-infrastructure costs for 2018 and 2019. All maintenance for waterworks-related assets was funded through the water and wastewater user charges, and maintenance for all other assets was funded through taxation.

MAINTENANCE AND REPAIR	2018 Actual	2019 Actual
Expenses		
All Departments (excl. Waterworks)	\$6,296,391	\$7,028,599
Waterworks	\$393,045	\$519,629
Revenues		
Taxation	\$(6,296,391)	\$(7,028,599)
Water and Wastewater Rate Charges	\$(393,045)	\$(519,629)
Net Surplus/(Deficit)	\$0	\$0

The following table outlines the historical capital expenses for 2018 and 2019, including rehabilitation, replacement, disposal, and expansion activities. The capital funding includes Development Charges, capital reserves, and grants.

REHABILITATION, REPLACEMENT, DISPOSAL AND EXPANSION	2018 Actual	2019 Actual
Capital Expenses		
Rehabilitation, Replacement, and Disposal	\$(59,503,005)	\$(67,096,131)
Expansion	\$(20,572,757)	\$(39,156,543)
Capital Financing		
Federal Gas Tax	\$8,902,815	\$13,321,387
Development Charges	\$19,006,203	\$39,270,970
Other External	\$12,190,862	\$1,364,016
Capital Reserves (Life Cycle)	\$21,607,634	\$29,065,836
Capital Reserves (Waterworks)	\$8,585,565	\$14,491,589
Capital Reserves (Stormwater)	\$9,782,682	\$8,738,875
Net Surplus/(Deficit)	\$0	\$0

6.3.2 Forecast Revenue and Expenditures

Assumptions

- Canada Community Building Fund has been identified as a funding source for the incremental asset life cycle capital program as part of the financing strategy. A key assumption is that the City will continue to receive this funding at the current levels throughout the forecast period.
- The first \$500,000 of taxation assessment growth is allocated to the Life Cycle Replacement and Capital Reserve. Note that this amount has been growing by two per cent since 2016.
- Since 2017 and continuing into 2022 (end of current Council term), Council approved an additional 0.5% tax rate increase each year for infrastructure investment.
- Dividends received from investments are consistent with current forecasts.
- Development charges rates are assumed to increase at two per cent annually.
- Interest earned on reserve balances will be two per cent annually.
- In the case where debt financing is needed, the analysis assumes debt using an annual interest rate of 2.5 per cent . For growth related debt, debt payments are shown as funded directly from the development charge reserve funds.