



THE ASSET MANAGEMENT PLAN FOR THE CITY OF NIAGARA FALLS

**2014**

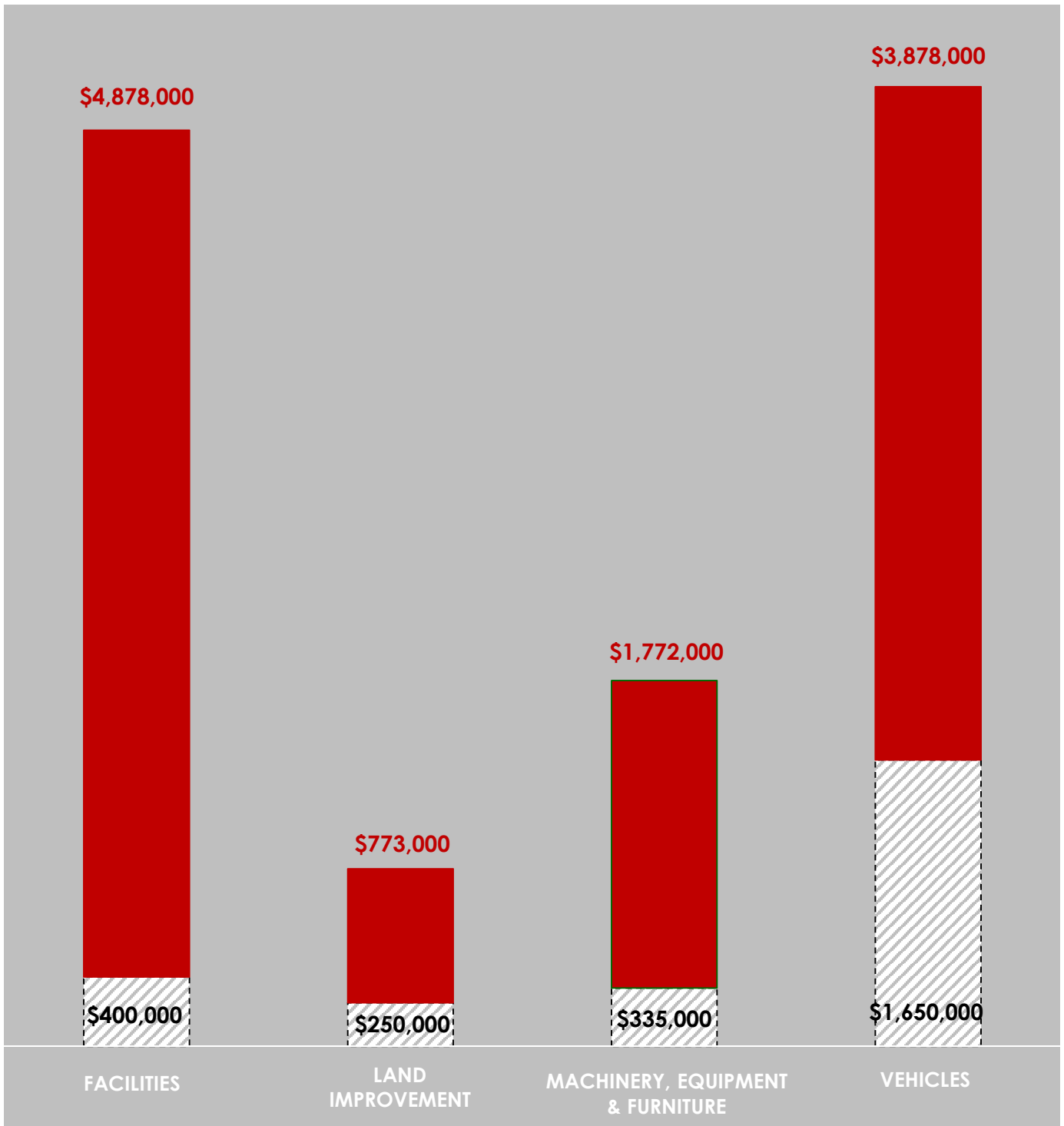
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SUBMITTED JANUARY 2015  
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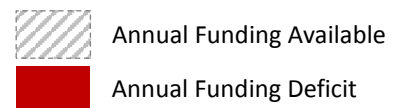
# State of the Infrastructure

## City of Niagara Falls

AVERAGE ANNUAL FUNDING REQUIRED vs. AVERAGE ANNUAL FUNDING AVAILABLE



**Total Annual Deficit: -\$11,301,000**



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January 2015

The City of Niagara Falls  
4310 Queen Street  
Niagara Falls, Ontario, L2E 6X5

We are pleased to submit the 2014 Asset Management Plan (AMP) for the City of Niagara Falls. This AMP complies with the requirements as outlined within the provincial *Building Together Guide for Municipal Asset Management Plans*. It will serve as a strategic, tactical, and financial document, ensuring the management of the municipal infrastructure follows sound asset management practices and principles, while optimizing available resources and establishing desired levels of service. Given the broad and profound impact of asset management on the community, and the financial & administrative complexity involved in this ongoing process, we recommend that senior decision-makers from across the organization are actively involved in its implementation.

The performance of a community's infrastructure provides the foundation for its economic development, competitiveness, prosperity, reputation, and the overall quality of life for its residents. As such, we are appreciative of your decision to entrust us with the strategic direction of its infrastructure and asset management planning, and are confident that this AMP will serve as a valuable tool.

Sincerely,  
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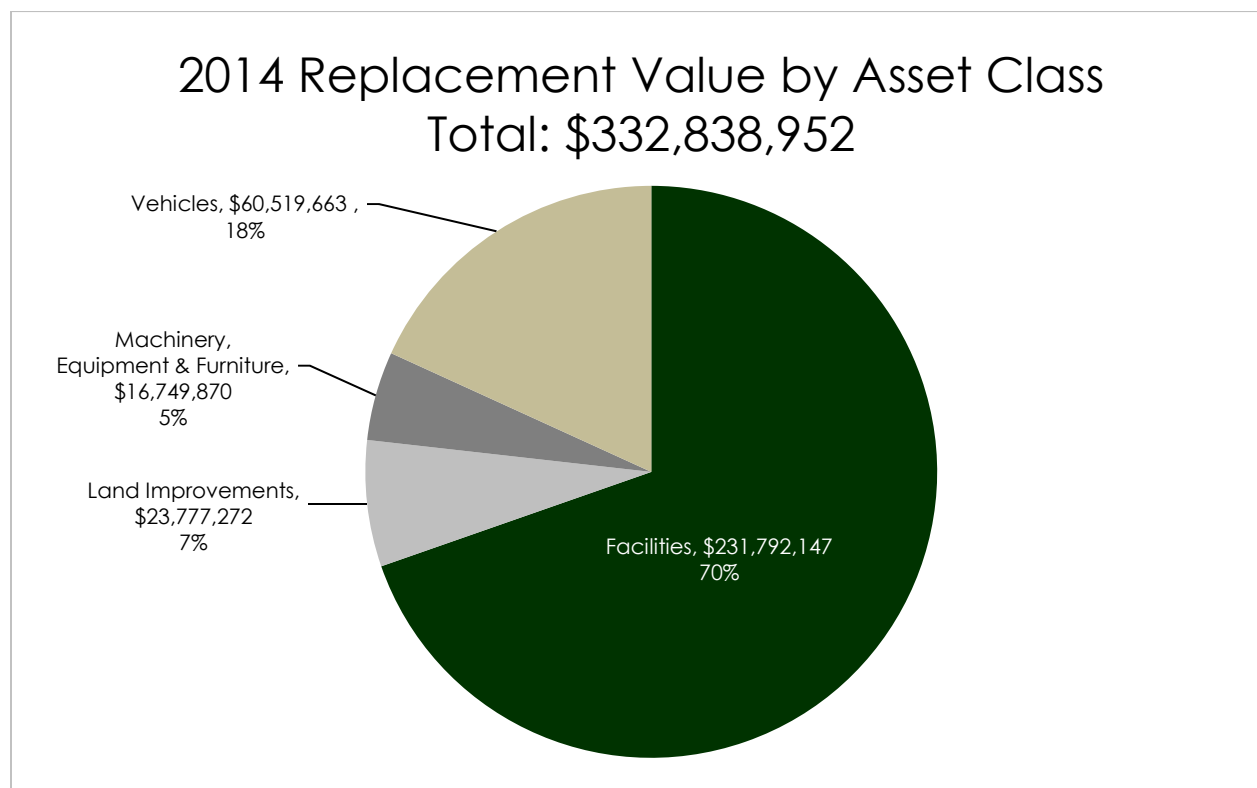
# 1.0 Executive Summary

The performance of a community's infrastructure and general capital provides the foundation for its economic development, competitiveness, prosperity, reputation, and the overall quality of life for its residents. Reliable and well-maintained general capital assets are essential for the delivery of critical core services for the citizens of a City.

A technically precise and financially rigorous asset management plan, diligently implemented, will mean that sufficient investments are made to ensure delivery of sustainable general capital and infrastructure services to current and future residents. The plan will also indicate the respective financial obligations required to maintain this delivery at established levels of service.

This Asset Management Plan (AMP) for the City of Niagara Falls meets all requirements as outlined within the provincial *Building Together Guide for Municipal Asset Management Plans*. It will serve as a strategic, tactical, and financial document, ensuring the management of the municipal infrastructure and general capital follows sound asset management practices and principles, while optimizing available resources and establishing desired levels of service. Given the expansive financial and social impact of asset management on both a City, and its citizens, it is critical that senior decision-makers, including department heads as well as the chief executives, are strategically involved.

Measured in 2014 dollars, the replacement value of the asset classes analyzed totaled **\$333 million** for the City of Niagara Falls.

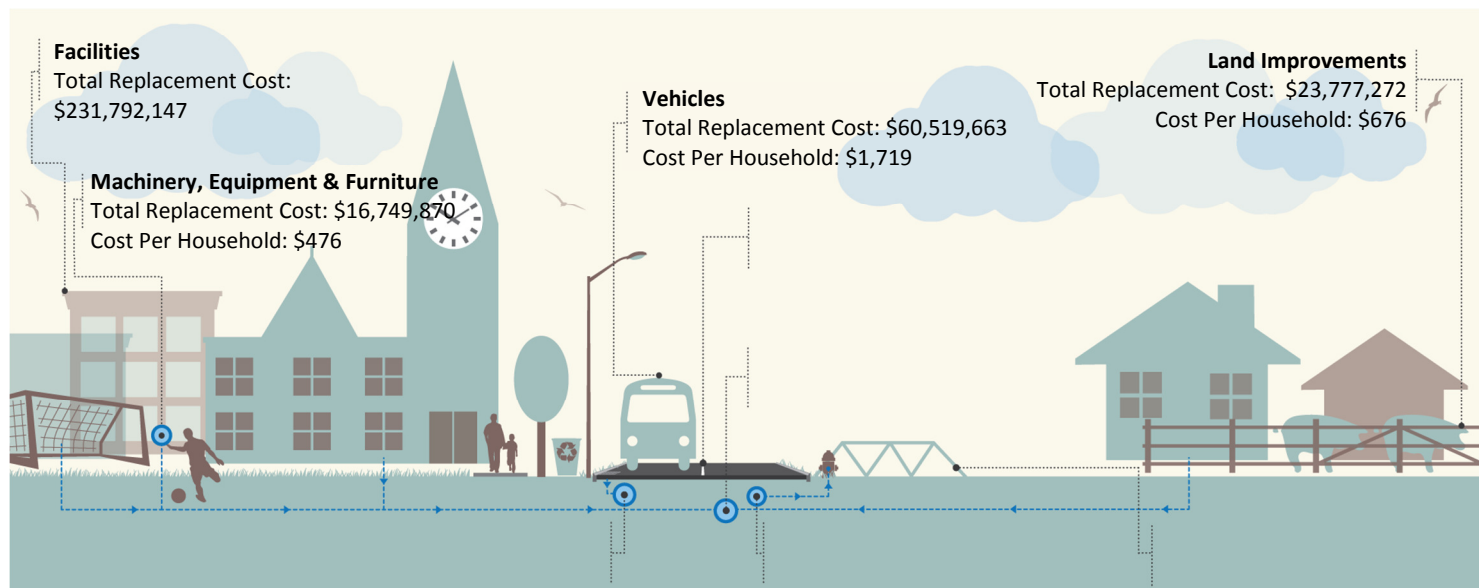




While the City is responsible for the strategic direction, it is the taxpayer in Niagara Falls who ultimately bears the financial burden. As such, a 'cost per household' (CPH) analysis was conducted for each of the asset classes to determine the financial obligation of each household in sharing the replacement cost of the City's assets. Such a measurement can serve as an excellent communication tool for both the administration and the council in communicating the importance of asset management to the citizen. The diagram below illustrates the total CPH, as well as the CPH for individual asset classes.

## General Capital Replacement Cost Per Household

Total: \$9,456 per household



In assessing the City's state of infrastructure, we examined, and graded, both the current condition (Condition vs. Performance) of the asset classes as well as the City's financial capacity to fund the asset's average annual requirement for sustainability (Funding vs. Need). We then generated the City's infrastructure report card. Currently the City has an annual deficit of \$11.3 million. The City of Niagara Falls is critically underfunded in all asset categories and a significant increase is required to ensure reinvestment in assets can occur as needed.

**Niagara Falls' grades on the Condition vs. Performance dimension were relatively consistent, receiving a 'C' in 2 of the 4 asset classes. The City earned a 'B' in the machinery, equipment and furniture network, indicating that on average, assets within the network display only minor deterioration.**

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. We have developed scenarios that would enable Niagara Falls to achieve full funding within 5 to 20 years for the following: tax funded assets, including machinery, equipment and furniture, facilities, land improvements and vehicles.

The average annual investment requirement for machinery, equipment and furniture, facilities, land improvements and vehicles is \$13,936,000. Annual revenue currently allocated to these assets for capital purposes is \$2,635,000 leaving an annual deficit of \$11,301,000. To put it another way, these general capital categories are currently funded at 19% of their long-term requirements. Niagara Falls has tax revenues of \$55,130,000 in 2014. Full funding would require an increase in tax revenue of 20.4% over time. We recommend a 20 year option which involves full funding being achieved over 20 years by:

- a) increasing tax revenues by 1.0% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- b) allocating \$400,000 of gas tax revenue to the vehicles category.
- c) increasing existing and future general capital budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

As outlined in table 5, there are no reserves available for use by applicable asset categories during the phase-in period to full funding. However, Niagara Falls' judicious use of debt in the past will allow the scenarios to assume that, if required, available debt capacity can be used for high priority and emergency general capital and infrastructure investments in the short to medium-term.

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## 2.0 Introduction

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This Asset Management Plan meets all provincial requirements as outlined within the Ontario Building Together Guide for Municipal Asset Management Plans. As such, the following key sections and content are included:

1. Executive Summary and Introduction
2. State of the Current Infrastructure
3. Desired Levels of Service
4. Asset Management Strategy
5. Financial Strategy

The following asset classes are addressed:

1. **Facilities:** Administration, fire, works, cemeteries, parks, culture and recreation
2. **Land Improvements:** Outdoor assets such as recreation, parks, trails, paths, sidewalks, landscaping and parking
3. **Machinery, Equipment & Furniture:** Miscellaneous capital equipment and machinery
4. **Vehicles:** all departmental vehicles, construction and transit

This asset management plan will serve as a strategic, tactical, and financial document ensuring the management of the municipal general capital follows sound asset management practices and principles, while optimizing available resources and establishing desired levels of service.

**At a strategic level**, within the State of the Current Infrastructure section, it will identify current and future challenges that should be addressed in order to maintain sustainable general capital services on a long-term, life cycle basis.

It will outline a Desired Level of Service (LOS) Framework for each asset category to assist the development and tracking of LOS through performance measures across strategic, financial, tactical, operational, and maintenance activities within the organization.

**At a tactical level**, within the Asset Management Strategy section, it will develop an implementation process to be applied to the needs-identification and prioritization of renewal, rehabilitation, and maintenance activities, resulting in a 10 year plan that will include growth projections.

**At a financial level**, within the Financial Strategy section, a strategy will be developed that fully integrates with other sections of this asset management plan, to ensure delivery and optimization of the 10 year general capital budget.

Through the development of this plan, all data, analysis, life cycle projections, and budget models will be provided through the Public Sector Digest's CityWide suite of software products. The software and plan will be synchronized, will evolve together, and therefore, will allow for ease of updates, and annual reporting of performance measures and overall results.

This will allow for continuous improvement of the plan and its projections. It is therefore recommended that the plan be revisited and updated on an annual basis, particularly as more detailed information becomes available.

## 2.1 Asset Management Plan (AMP) - Relationship to Strategic Plan

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The major benefit of strategic planning is the promotion of strategic thought and action. A strategic plan spells out where an organization wants to go, how it's going to get there, and helps decide how and where to allocate resources, ensuring alignment to the strategic priorities and objectives. It will help identify priorities and guide how municipal tax dollars and revenues are spent into the future.

The strategic plan usually includes a vision and mission statement, and key organizational priorities with alignment to objectives and action plans. Given the growing economic and political significance of the general capital, the asset management plan will become a central component of most municipal strategic plans, influencing corporate priorities, objectives, and actions.

## 2.2 AMP - Relationship to other Plans

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An asset management plan is a key component of the City's planning process linking with multiple other corporate plans and documents. For example:

- **The Official Plan** – The AMP should utilize and influence the land use policy directions for long-term growth and development as provided through the Official Plan.
- **Long Term Financial Plan** – The AMP should both utilize and conversely influence the financial forecasts within the long-term financial plan.
- **Capital Budget** – The decision framework and the infrastructure and general capital needs identified in the AMP form the basis on which future capital budgets are prepared.
- **Infrastructure Master Plans** – The AMP will utilize goals and projections from general capital and infrastructure master plans and in turn will influence future master plan recommendations.
- **By-Laws, standards, and policies** – The AMP will influence and utilize policies and by-laws related to infrastructure and general capital management practices and standards.
- **Regulations** – The AMP must recognize and abide by industry and senior government regulations.
- **Business Plans** – The service levels, policies, processes, and budgets defined in the AMP are incorporated into business plans as activity budgets, management strategies, and performance measures.

## 2.3 Purpose and Methodology

The following diagram depicts the approach and methodology, including the key components and links between those components that embody this asset management plan:



It can be seen from the above that a City's general capital and infrastructure planning starts at the corporate level with ties to the strategic plan, alignment to the community's expectations, and compliance with industry and government regulations.

Then, through the State of the Infrastructure analysis, overall asset inventory, valuation, condition and performance are reported. In this initial AMP, due to a lack of current condition data for the majority of asset classes, present performance and condition are estimated by using the current age of the asset in comparison to its overall useful design life. In future updates to this AMP, accuracy of reporting will be significantly increased through the use of holistically captured condition data. Also, a life cycle analysis of needs for each general capital class is conducted. This analysis yields the sustainable funding level, compared against actual current funding levels, and determines whether there is a funding surplus or deficit for each general capital program. The overall measure of condition and available funding is finally scored for each asset class and presented as a star rating (similar to the hotel star rating) and a letter grade (A-F) within the Infrastructure Report card.

From the lifecycle analysis above, the City gains an understanding of the level of service provided today for each general capital class and the projected level of service for the future. The next section of the AMP provides a framework for a City to develop a Desired Level of Service (or target service level) and develop performance measures to track the year-to-year progress towards this established target level of service.

The Asset Management Strategy then provides a detailed analysis for each general capital class. Included in this analysis are best practices and methodologies from within the industry which can guide the overall management of the general capital in order to achieve the desired level of service. This section also provides an overview of condition assessment techniques for each asset class; life cycle interventions required, including those interventions that yield the best return on investment; and prioritization techniques, including risk quantification, to determine which priority projects should move forward into the budget first.

The Financing Strategy then fully integrates with the asset management strategy and asset management plan, and provides a financial analysis that optimizes the general capital budget. All revenue sources available are reviewed, such as the tax levy, debt allocations, rates, reserves, grants, gas tax, development charges, etc., and necessary budget allocations are analysed to inform and deliver the general capital programs.

Finally, in subsequent updates to this AMP, actual project implementation will be reviewed and measured through the established performance metrics to quantify whether the desired level of service is achieved or achievable for each general capital class. If shortfalls in performance are observed, these will be discussed and alternate financial models or service level target adjustments will be presented.

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## 3.0 State of the Infrastructure (SOTI)

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### 3.1 Objective and Scope

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**Objective:** To identify the state of the City's general capital today and the projected state in the future if current funding levels and management practices remain status quo.

The analysis and subsequent communication tools will outline future asset requirements, will start the development of tactical implementation plans, and ultimately assist the organization to provide cost effective sustainable services to the current and future community.

The approach was based on the following key industry state of the infrastructure documents:

- Canadian Infrastructure Report Card
- City of Hamilton's State of the Infrastructure reports
- Other Ontario Municipal State of the Infrastructure reports

The above reports are themselves based on established principles found within key, industry best practices documents such as:

- The National Guide for Sustainable Municipal Infrastructure (Canada)
- The International Infrastructure Management Manual (Australia / New Zealand)
- American Society of Civil Engineering Manuals (U.S.A.)

**Scope:** Within this State of the Infrastructure report, a high level review will be undertaken for the following asset classes:

1. **Facilities:** Administration, fire, works, cemeteries, parks, culture and recreation
2. **Land Improvements:** Outdoor assets such as recreation, parks, trails, paths, sidewalks, landscaping and parking
3. **Machinery, Equipment & Furniture:** Miscellaneous capital equipment and machinery
4. **Vehicles:** all departmental vehicles, construction and transit

### 3.2 Approach

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The asset classes above were reviewed at a very high level due to the nature of data and information available. Subsequent detailed reviews of this analysis are recommended on an annual basis, as more detailed conditions assessment information becomes available for each general capital program.

#### 3.2.1 Base Data

In order to understand the full inventory of general capital assets within Niagara Falls, all tangible capital asset data, as collected to meet the PSAB 3150 accounting standard, was loaded into the CityWide Tangible Asset™ software module. This database now provides a detailed and summarized inventory of assets as used throughout the analysis within this report and the entire Asset Management Plan.

#### 3.2.2 Asset Deterioration Review

The City has supplied condition data for approximately 15% of its general capital assets listed in this AMP. For those assets without condition data, the deterioration review will rely on the 'straight line' or 'deterioration curve' amortization schedule approach provided from the accounting data. Although this approach is based on age data and useful life projections, and is not as accurate as the use of detailed condition data, it does provide a relatively reliable benchmark of future requirements.



### 3.2.3 Identify Sustainable Investment Requirements

A gap analysis was performed to identify sustainable investment requirements for each asset category. Information on current spending levels and budgets was acquired from the organization, future investment requirements were calculated, and the gap between the two was identified.

The above analysis is performed by using investment and financial planning models, and life cycle costing analysis, embedded within the CityWide software suite of applications.

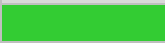




### 3.2.4 Asset Rating Criteria

Each asset category will be rated on two key dimensions:

- **Condition vs. Performance:** Based on the condition of the asset today and how well performs its function.
- **Funding vs. Need:** Based on the actual investment requirements to ensure replacement of the asset at the right time, versus current spending levels for each asset group.

### 3.2.5 Infrastructure Report Card

The dimensions above will be based on a simple 1–5 star rating system, which will be converted into a letter grading system ranging from A-F. An average of the two ratings will be used to calculate the combined rating for each asset class. The outputs for all municipal assets will be consolidated within the CityWide software to produce one overall Infrastructure Report Card showing the current state of the assets.

<b>Grading Scale: Condition vs. Performance</b>			
Based on the condition of the asset today and how well it performs its function.			
Star Rating	Letter Grade	Color Indicator	Description
★★★★★	<b>A</b>		<b>Excellent:</b> No noticeable defects
★★★★	<b>B</b>		<b>Good:</b> Minor deterioration
★★★	<b>C</b>		<b>Fair:</b> Deterioration evident, function is affected
★★	<b>D</b>		<b>Poor:</b> Serious deterioration. Function is inadequate
★	<b>F</b>		<b>Critical:</b> No longer functional. General or complete failure

<b>Grading Scale: Funding vs. Need</b>		
Based on the actual investment requirements to ensure replacement of the asset at the right time, versus current spending levels for each asset group.		
Star Rating	Letter Grade	Description
★★★★★	<b>A</b>	<b>Excellent:</b> 91 to 100% of need
★★★★	<b>B</b>	<b>Good:</b> 76 to 90% of need
★★★	<b>C</b>	<b>Fair:</b> 61 to 75% of need
★★	<b>D</b>	<b>Poor:</b> 46 – 60% of need
★	<b>F</b>	<b>Critical:</b> under 45% of need

### **3.2.6 General Methodology and Reporting Approach**

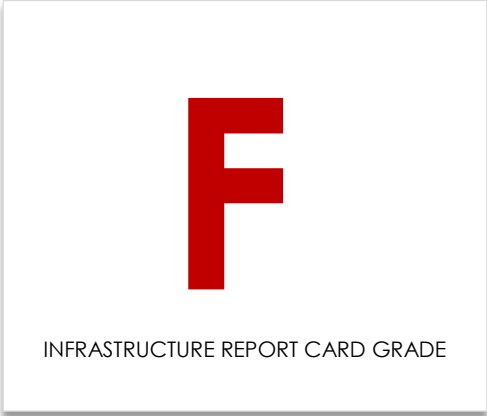
The report will be based on the seven key questions of asset management as outlined within the National Guide for Sustainable Municipal Infrastructure:

- What do you own and where is it? (inventory)
- What is it worth? (valuation / replacement cost)
- What is its condition / remaining service life? (function & performance)
- What needs to be done? (maintain, rehabilitate, replace)
- When do you need to do it? (useful life analysis)
- How much will it cost? (investment requirements)
- How do you ensure sustainability? (long-term financial plan)

The above questions will be answered for each individual asset category in the following report sections.

---

# 3.3 Facilities



### 3.3 Facilities

#### 3.3.1 What do we own?

The table below outlines the City's facility inventory:

Facilities Inventory		
Asset Type	Asset Component	Units
Facilities	Cemeteries	3
	Fire	13
	General Government	34
	Mun Works	10
	Parks	31
	Recreation and Culture	37

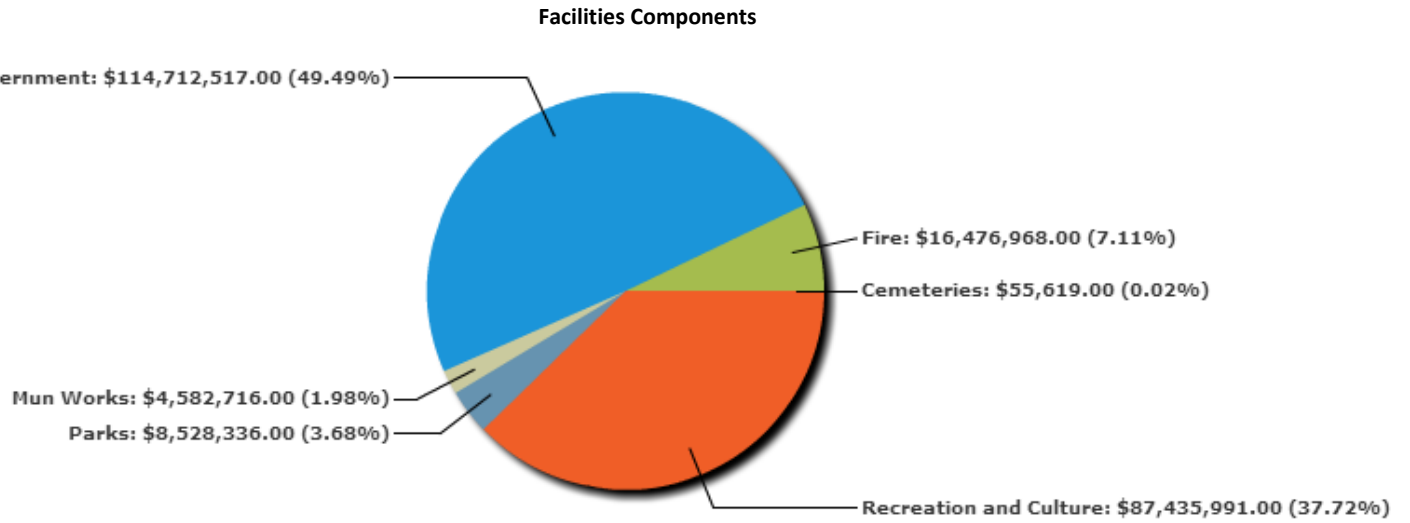
The facilities data was extracted from the Tangible Capital Asset module of the CityWide software suite.

#### 3.3.2 What is it worth?

The estimated replacement value of the City's facilities, in 2014 dollars, is approximately \$232 million. The cost per household for Facilities is \$6,585 based on 35,199 households.

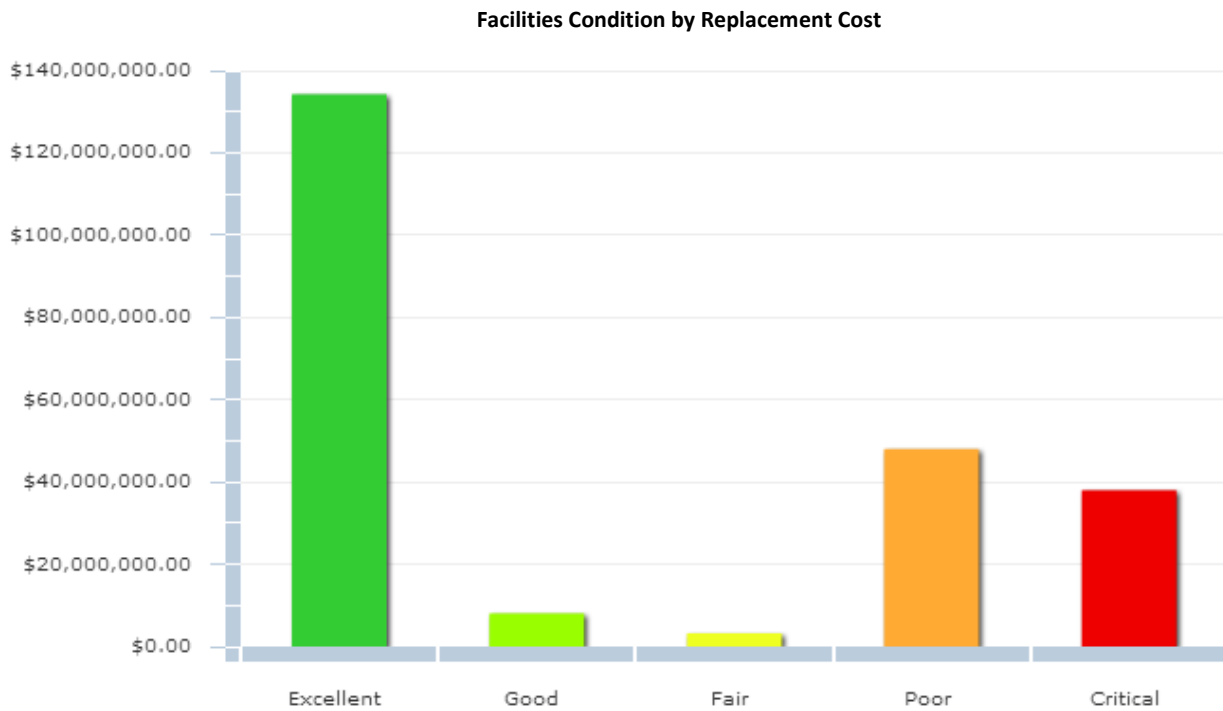
Facilities Replacement Value				
Asset Type	Asset Component	Units	2014 Unit Replacement Cost	2014 Replacement Cost
Facilities	Cemeteries	3	CPI Monthly (ON)	\$55,619
	Fire	13	CPI Monthly (ON)	\$16,476,968
	General Government	34	CPI Monthly (ON)	\$114,712,517
	Mun Works	10	CPI Monthly (ON)	\$4,582,716
	Parks	31	CPI Monthly (ON)	\$8,528,336
	Recreation and Culture	37	CPI Monthly (ON)	\$87,435,991
				<b>\$231,792,147</b>

The pie chart below provides a breakdown of each of the Facilities components to the overall structures value.



### 3.3.3 What condition is it in?

Based on a combination of age and condition analysis, nearly 63% of the City's facilities are in fair to excellent condition. As such, the City received a Condition vs. Performance rating of 'C+'.



### 3.3.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the facilities below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs		
Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr.
Major Maintenance	Maintenance and repair activities, generally unplanned, however, anticipated activities that are included in the annual operating budget.	2nd Qtr.
Rehabilitation	Major activities such as the upgrade or replacement of smaller individual facility components (e.g. windows)	3rd Qtr.
Replacement	Complete replacement of asset components or a facility itself.	4th Qtr.

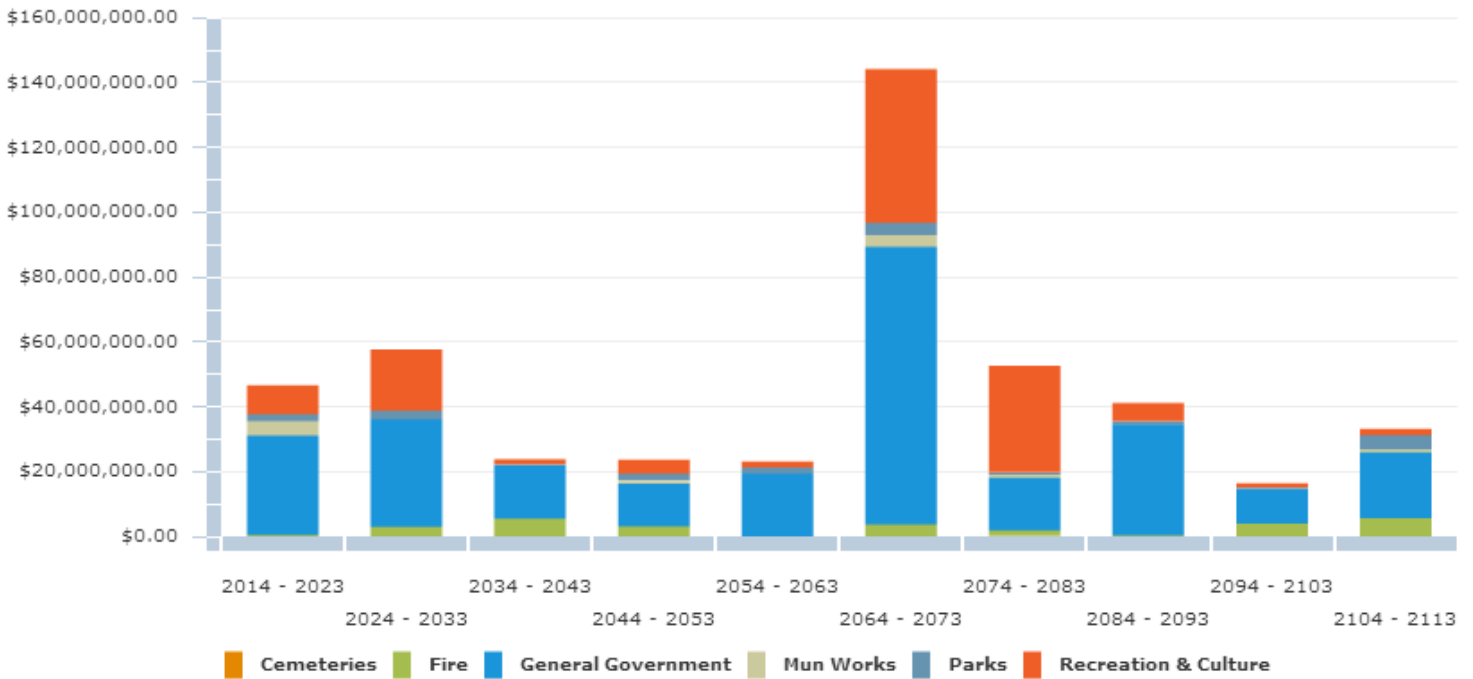
### 3.3.5 When do we need to do it?

For the purpose of this report, 'useful life' data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years		
Asset Type	Asset Component	Useful Life in Years
Facilities	Cemeteries	40 to 70
	Fire	20 to 70
	General Government	1 to 100
	Mun Works	15 to 50
	Parks	40 to 60
	Recreation and Culture	4 to 100

The following graph shows the current projection of facilities replacements based on the age data (91%) and condition analysis (9%).

**Facilities Replacement Profile**



**3.9.6 How much money do we need?**

The analysis completed to determine capital revenue requirements was based on the following constraints and assumptions:

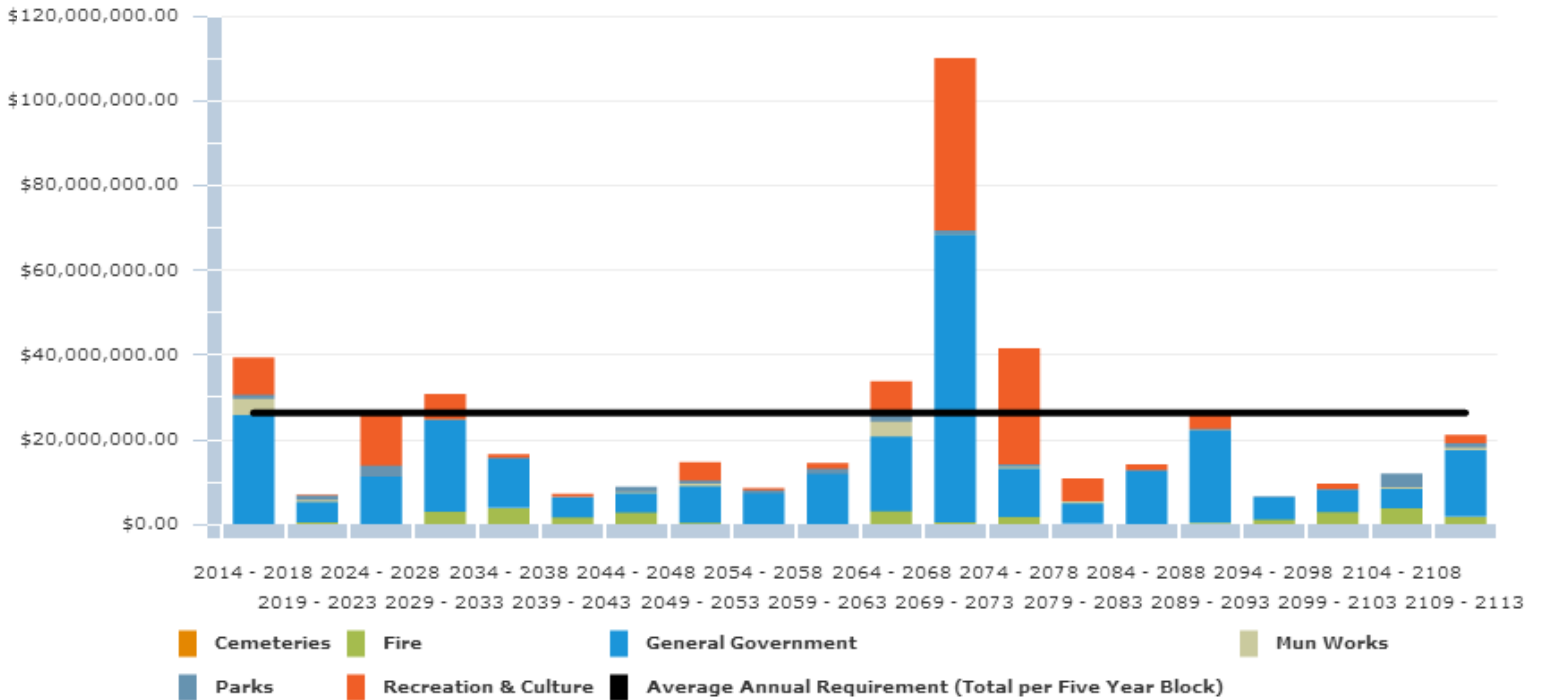
1. Replacement costs are based upon the "What is it worth" section above.
2. The timing for individual facility replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2014 dollars.
4. The analysis was run for a 100 year period to ensure all assets cycled through at least one iteration of replacement, therefore providing a sustainable projection.

**3.3.7 How do we reach sustainability?**

Based upon the above assumptions, the average annual revenue required to sustain Niagara Falls' facilities is **\$5,278,000**. Based on Niagara Falls' current annual funding of **\$400,000**, there is an annual **deficit of \$4,878,000**. As such, the City received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.



### Sustainable Revenue Requirement per Five Year Block



In conclusion, the City's facilities, based on a combination of age and condition data, are generally in good condition, however approximately 37% of facilities or components are in poor to critical condition. There are needs to be addressed within the next 5 years totaling approximately \$39 million. A condition assessment program should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. Further detail is outlined within the "asset management strategy" section of this AMP.

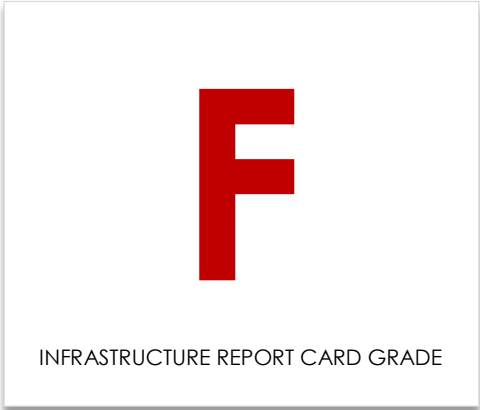
### 3.3.8 Recommendations

The City received an overall rating of 'F' for its facilities, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A detailed study to define the current condition of the facilities and their components (structural, architectural, electrical, mechanical, site, etc.) should be undertaken, as described further within the "Asset Management Strategy" section of this AMP.
2. Once the above study is complete, a new performance age should be applied to each asset and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.

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# 3.4 Land Improvements



## 3.4 Land Improvements

### 3.4.1 What do we own?

Niagara Falls is responsible for the following land improvements inventory:

Land Improvements Inventory		
Asset Type	Asset Component	Units
Land Improvements	Sports Structure & Equipment	85
	Driveway and Parking	19
	Landscaping	94
	Playgrounds & Parks	59
	Trails, Path and Sidewalk	45
	Splash Pad	6
	Other <sup>1</sup>	45

The land improvements data was extracted from the Tangible Capital Asset module of the CityWide software suite.

### 3.4.2 What is it worth?

The estimated replacement value of all land improvements, in 2014 dollars, is \$23.7 million. The cost per household for the Land Improvements is \$676 based on 35,199 households.

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<sup>1</sup> Blades of Steel, Boardwalk & Stairs, Bollards & Benches, Docks, Flagpole, Gate, Helicopter Pad Area, Irrigation System, Lighting, Millennium Clock, Model Airplane Flying Site, Oil Tank, Pavilion, Pay Phone Millwork, Pool and Retaining Wall, Shelter, Signage, Spray Pad

### Land Improvements Replacement Value

Asset Type	Asset Component	Units	2014 Unit Replacement Cost	2014 Overall Replacement Cost (\$)
Land Improvements	Landscaping <sup>2</sup>	94	CPI Monthly (ON)	4,875,174
	Sports Structure & Equipment <sup>3</sup>	85	CPI Monthly (ON)	2,566,913
	Blades of Steel	1	CPI Monthly (ON)	18,592
	Boardwalk & Stairs	1	CPI Monthly (ON)	18,540
	Docks	2	CPI Monthly (ON)	72,294
	Bollards & Benches	1	CPI Monthly (ON)	34,668
	Trails, Paths & Sidewalks <sup>4</sup>	45	CPI Monthly (ON)	3,614,998
	Driveway and Parking <sup>5</sup>	19	CPI Monthly (ON)	4,112,151
	Flagpole	1	CPI Monthly (ON)	9,753
	Gate	1	CPI Monthly (ON)	16,881
	Helicopter Pad Area	1	CPI Monthly (ON)	57,638
	Irrigation System	6	CPI Monthly (ON)	182,281
	Lighting	5	CPI Monthly (ON)	541,464
	Millennium Clock	1	CPI Monthly (ON)	48,730
	Model Airplane Flying Site	1	CPI Monthly (ON)	39,664
	Oil Tank	2	CPI Monthly (ON)	16,878
	Pavilion	2	CPI Monthly (ON)	20,399
	Pay Phone Millwork	1	CPI Monthly (ON)	10,000
	Playgrounds and Parks <sup>6</sup>	59	CPI Monthly (ON)	2,086,043
	Pool	8	CPI Monthly (ON)	3,288,764
Retaining Wall	1	CPI Monthly (ON)	453,309	
Shelter	8	CPI Monthly (ON)	335,306	
Signage	1	CPI Monthly (ON)	17,106	
Splash Pad	6	CPI Monthly (ON)	1,199,879	
Spray Pad	1	CPI Monthly (ON)	139,847	
				<b>\$23,777,272</b>

<sup>2</sup> Includes Landscaping, Fences and Artificial Turf

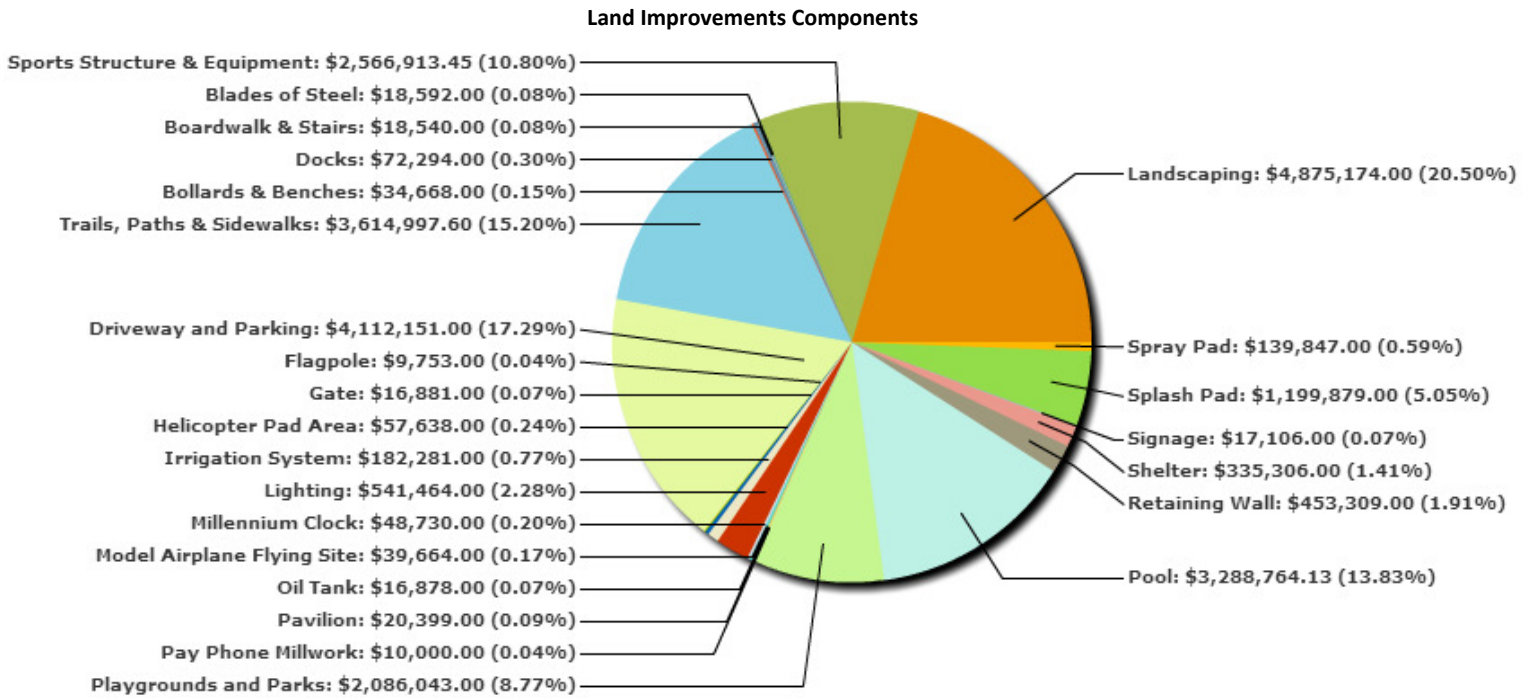
<sup>3</sup> Includes Courts, Batting Cage, Bleachers & Players Benches, Electronic Scoreboard, Informal Baseball, Scorekeepers Booth, Soccer Fields, Soccer Pitch, Sr. Ball Diamond

<sup>4</sup> Sidewalk, Helicopter Pad Area, Path, Section V Walkway, Walking/Running Track

<sup>5</sup> Concrete & Curbs, Concrete Pad, Driveway and Parking, Parking Lot

<sup>6</sup> Playground, Slides and Swings, Playspace, Skate Park

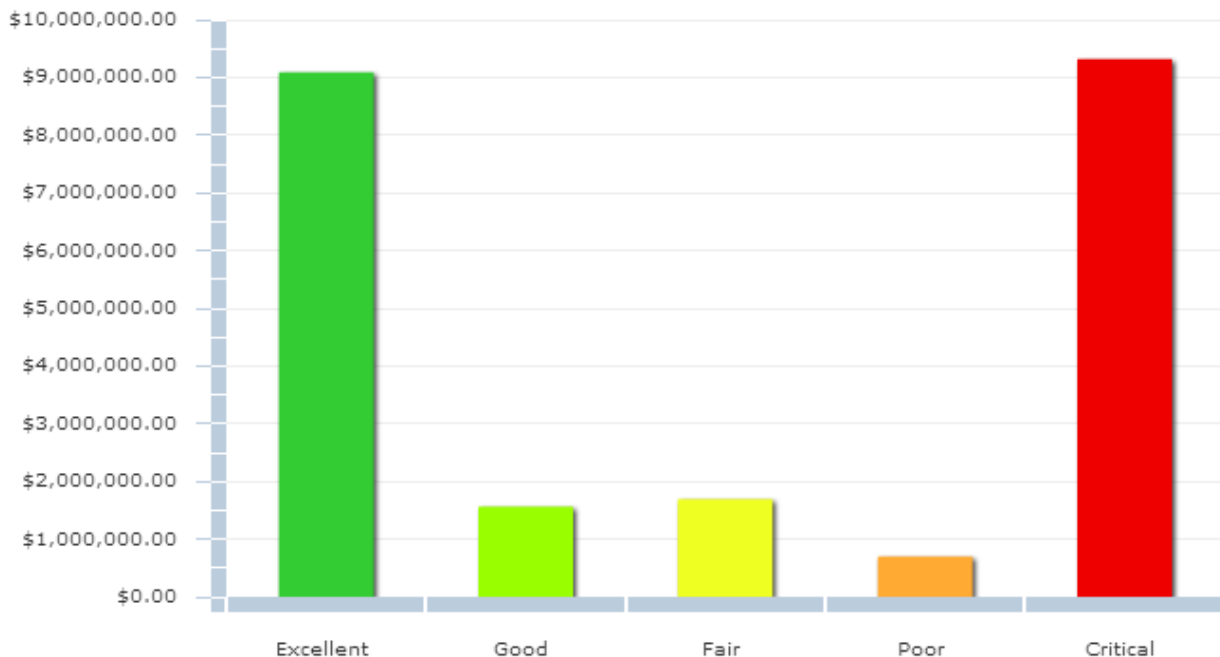
The pie chart below provides a breakdown of each of the network components to the overall system value.



### 3.4.3 What condition is it in?

Based on a combination of age and condition analysis, nearly 55% of the City's land improvements are in fair to excellent condition. As such, the City received a Condition vs. Performance rating of 'C'.

**Land Improvements Condition by Replacement Cost**



### 3.4.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the land improvements below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs		
Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr.
Major Maintenance	Maintenance and repair activities, generally unplanned, however, anticipated activities that are included in the annual operating budget.	2nd Qtr.
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service	3rd Qtr.
Replacement	Full asset or component renewal or replacement	4th Qtr.

### 3.4.5 When do we need to do it?

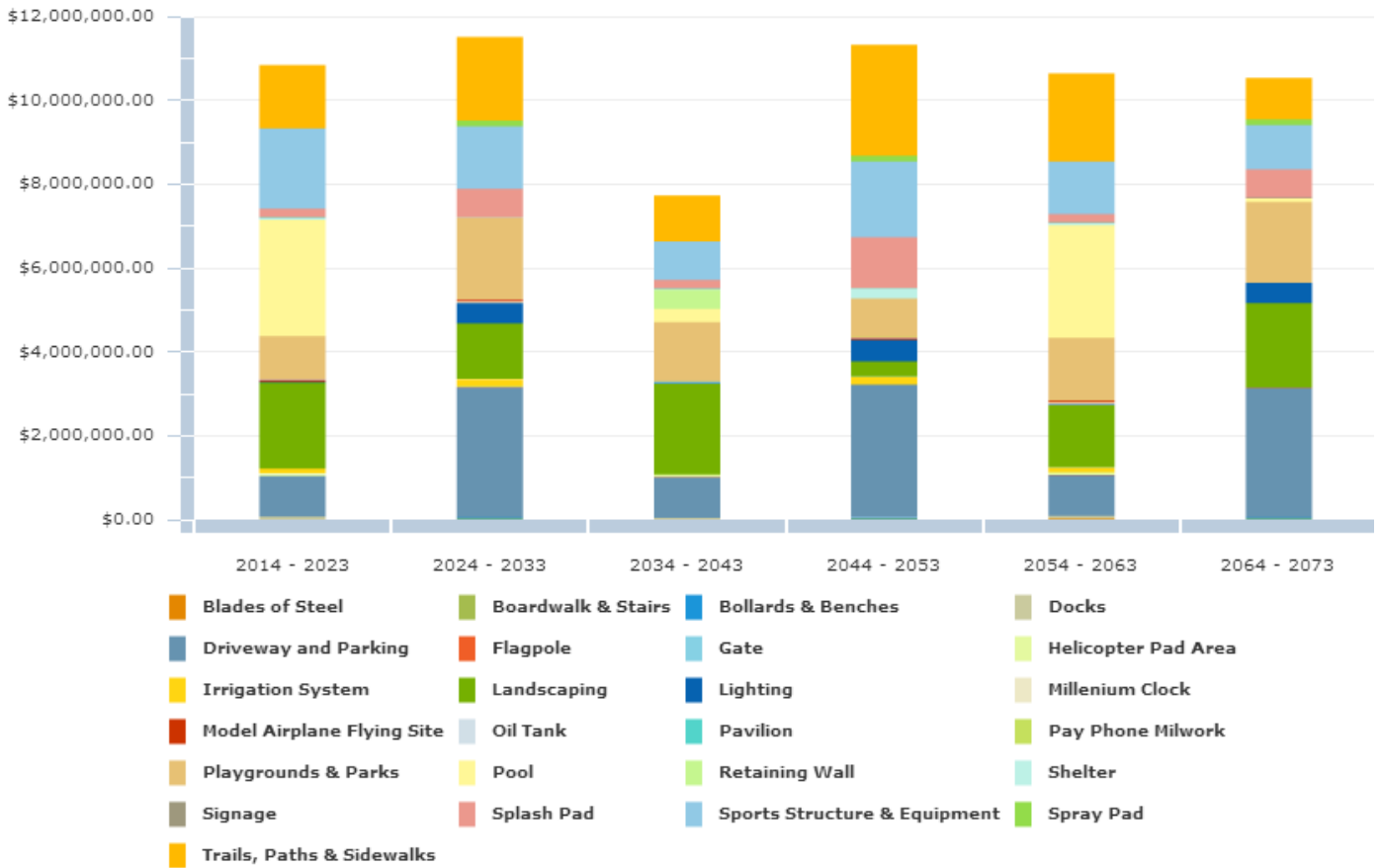
For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years		
Asset Type	Asset Component	Useful Life in Years
Land Improvements	Sports Structure & Equipment	0 to 30
	Driveway and Parking	10 to 20
	Landscape	0 to 60
	Playground	10 to 20
	Path and Sidewalk	15 to 40
	Splash Pad	10 to 40
	Other <sup>7</sup>	0 to 60

As field condition information becomes available in time, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset age and condition, therefore, future replacement requirements. The following graph shows the current projection of land improvement replacements based on a combination of age (90%) and condition analysis (10%).

<sup>7</sup> Blades of Steel, Boardwalk & Stairs, Bollards & Benches, Docks, Flagpole, Gate, Helicopter Pad Area, Irrigation System, Lighting, Millennium Clock, Model Airplane Flying Site, Oil Tank, Pavilion, Pay Phone Millwork, Pool and Retaining Wall, Shelter, Signage, Spray Pad

**Land Improvements Replacement Profile**



**3.4.6 How much money do we need?**

The analysis completed to determine capital revenue requirements was based on the following assumptions:

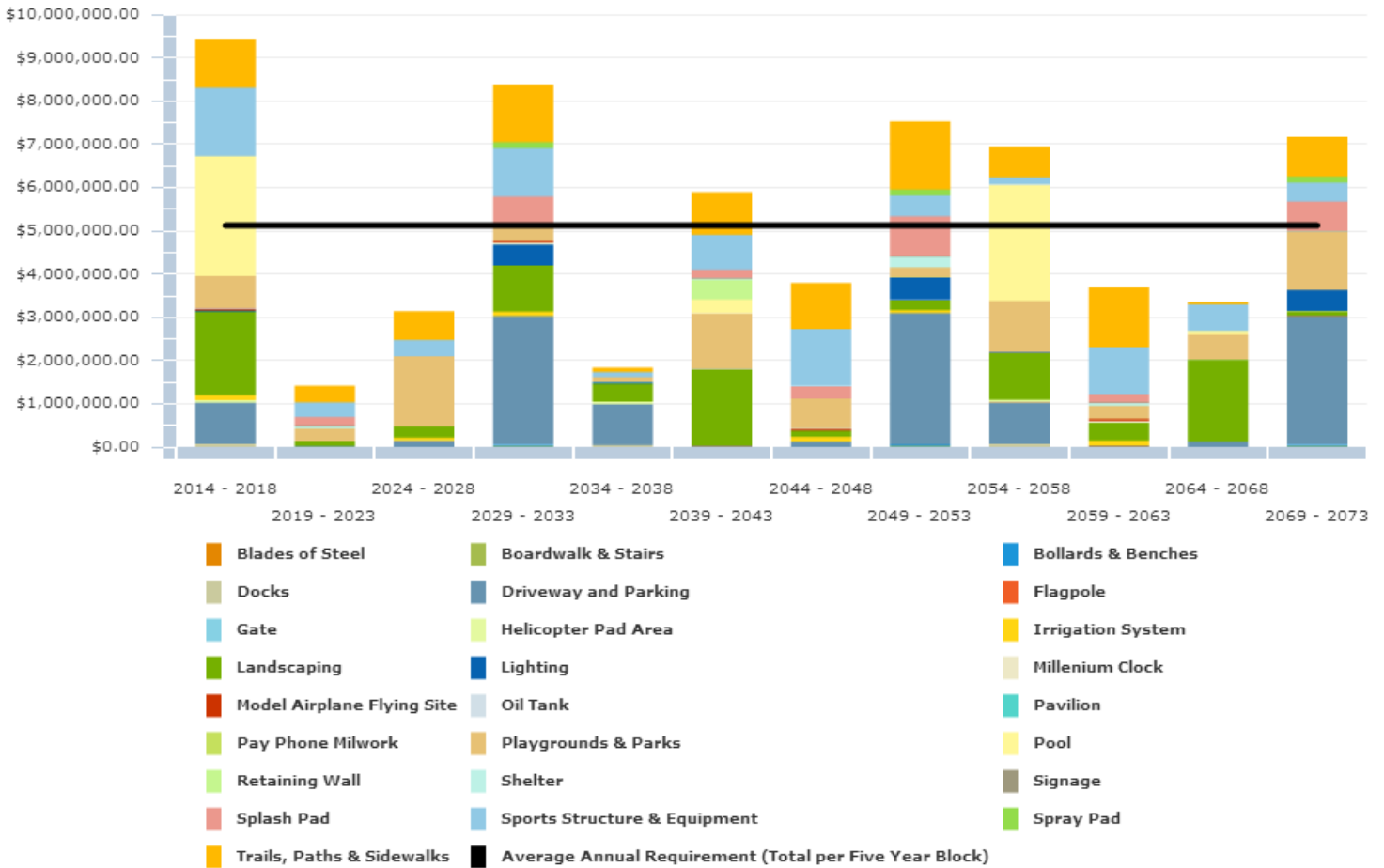
1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual land improvement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2014 dollars.
4. The analysis was run for a 60 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

**3.4.7 How do we reach sustainability?**

Based upon the above assumptions, the average annual revenue required to sustain Niagara Falls' land improvements is approximately **\$1,023,000**. Based on Niagara Falls' current annual funding of **\$250,000**, there is a **deficit of \$773,000**. Given this deficit, the City received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.



**Sustainable Revenue Requirements per Five Year Block**



In conclusion, Niagara Falls' land improvements are in fair condition generally, based on age and condition data, with approximately 45% in poor or critical condition. There are needs to be addressed within the next 5 years totaling approximately \$9.4 million.

A condition assessment program should be established for these assets to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. It should be noted, although some of the assets included within this category are unique and specialized, a general approach to condition assessment and life cycle management is discussed further in the Parks and Open Spaces sections of the Asset Management Strategy portion of this Asset Management Plan.

### 3.4.8 Recommendations

The City received an overall rating of 'F' for its Land Improvements, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A more detailed study to define the current condition of the Land Improvements should be undertaken as described further within the "Parks and Open Spaces" sections of the "Asset Management Strategy" section of this AMP.
2. Once the above study is complete, a new performance age should be applied to each asset and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.

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# 3.5 Machinery, Equipment & Furniture

**D**

INFRASTRUCTURE REPORT CARD GRADE



## 3.5 Machinery, Equipment & Furniture

### 3.5.1 What do we own?

The inventory components of the equipment class are outlined in the table below.

Machinery, Equipment & Furniture Inventory		
Asset Type	Asset Component	Quantity/Units
Machinery, Equipment & Furniture	Cemeteries <sup>8</sup>	5
	Engineering	1
	Finance	3
	Fire <sup>9</sup>	318
	General Government <sup>10</sup>	96
	Information Systems	872
	Mun Works	36
	Museums	9
	Parking Meters	240
	Parks	35
	Recreation	22
	Roads	4
	Sanitary Sewer	3
	Transit	71
	Transportation/Traffic <sup>11</sup>	16
Water	3	

The equipment class data was extracted from the Tangible Capital Asset module of the CityWide software application.

### 3.5.2 What is it worth?

The estimated replacement value of the equipment class, in 2014 dollars, is \$16.7 million. The cost per household for the machinery, equipment and furniture network is \$476 based on 35,199 households.

<sup>8</sup> The quantity calculation does not include 'Cemetery Business Plan'

<sup>9</sup> The quantity calculation does not include 'Master Fire Plan'

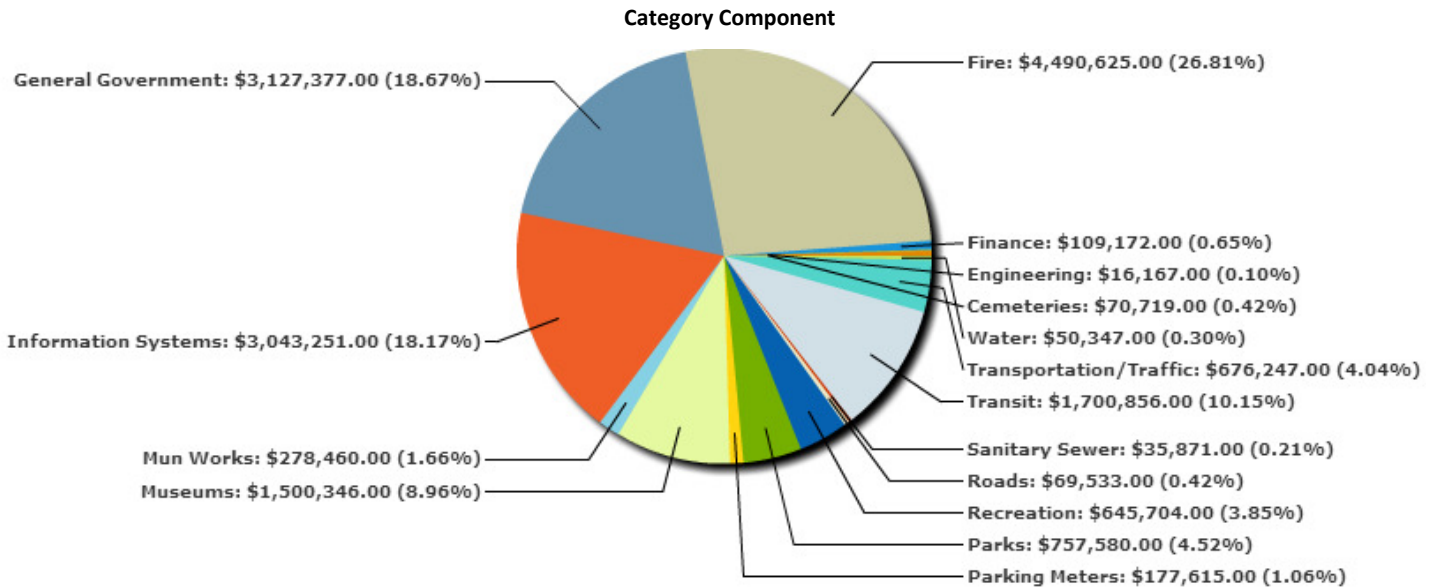
<sup>10</sup> The quantity calculation does not include '2009 DC Study & Bylaw'

<sup>11</sup> The quantity calculation does not include 'Transportation Master Plan'

### Machinery, Equipment & Furniture Replacement Value

Asset Type	Asset Component	Quantity/ Units	2014 Unit Replacement Cost	2014 Overall Replacement Cost
<b>Machinery, Equipment &amp; Furniture</b>	Cemeteries <sup>12</sup>	5	CPI Tables	\$70,719
	Engineering	1	CPI Tables	\$16,167
	Finance	3	CPI Tables	\$109,172
	Fire <sup>13</sup>	318	CPI Tables	\$4,490,625
	General Government <sup>14</sup>	96	CPI Tables	\$3,127,377
	Information Systems	872	CPI Tables	\$3,043,251
	Mun Works	36	CPI Tables	\$278,460
	Museums	9	CPI Tables	\$1,500,346
	Parking Meters	240	CPI Tables	\$177,615
	Parks	35	CPI Tables	\$757,580
	Recreation	22	CPI Tables	\$645,704
	Roads	4	CPI Tables	\$69,533
	Sanitary Sewer	3	CPI Tables	\$35,871
	Transit	71	CPI Tables	\$1,700,856
	Transportation/Traffic <sup>15</sup>	16	CPI Tables	\$676,247
	Water	3	CPI Tables	\$50,347
				<b>\$16,749,870</b>

The pie chart below provides a breakdown of each of the network components to the overall system value.

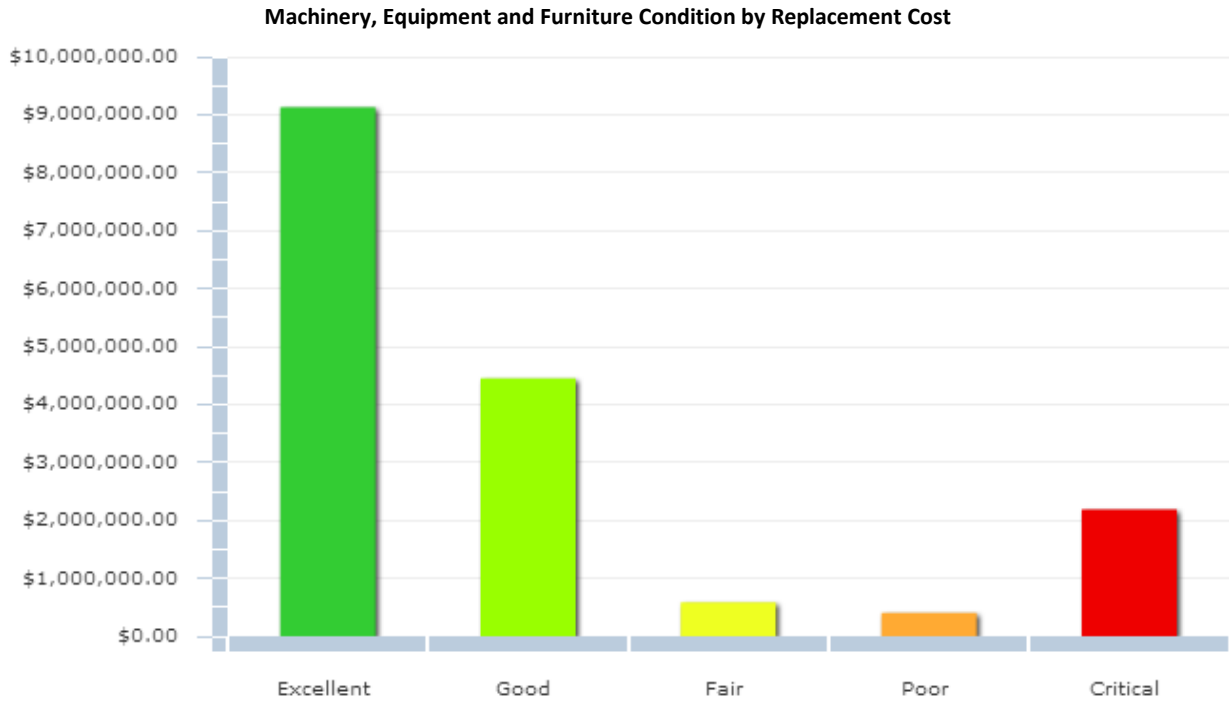


<sup>12</sup> The quantity calculation does not include 'Cemetery Business Plan'  
<sup>13</sup> The quantity calculation does not include 'Master Fire Plan'  
<sup>14</sup> The quantity calculation does not include '2009 DC Study & Bylaw'  
<sup>15</sup> The quantity calculation does not include 'Transportation Master Plan'



### 3.5.3 What condition is it in?

Based on a combination of age and condition analysis, 85% of the City's machinery, equipment and furniture class is in fair to excellent condition. As such, the City received a Condition vs. Performance rating of 'B'.



### 3.5.4 What do we need to do to it?

There are generally four distinct phases in an assets life cycle. These are presented at a high level for the equipment class below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

<b>Addressing Asset Needs</b>		
Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr.
Major Maintenance	Maintenance and repair activities, generally unplanned, however, anticipated activities that are included in the annual operating budget.	2nd Qtr.
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service	3rd Qtr.
Replacement	Full asset or component renewal or replacement	4th Qtr.

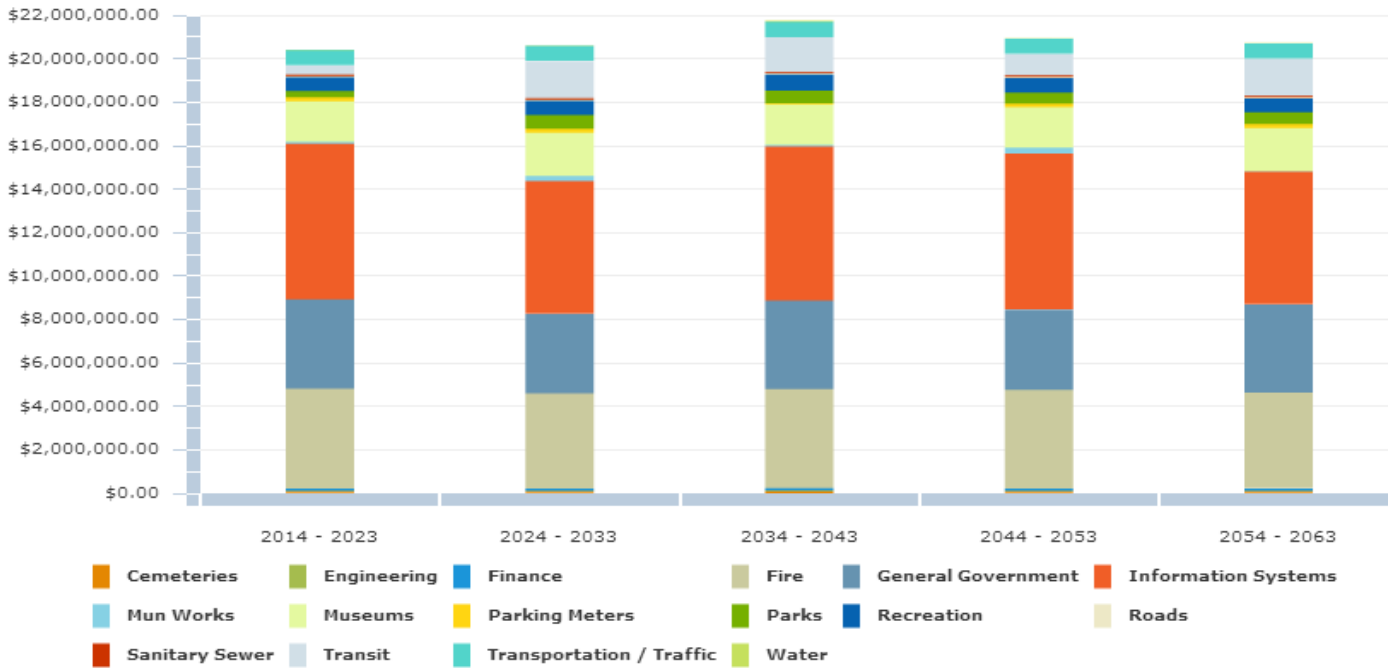
### 3.5.5 When do we need to do it?

For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in years		
Asset Type	Asset Component	Useful Life in Years
Machinery, Equipment and Furniture	Cemeteries	5 to 10
	Engineering	5
	Finance	10
	Fire	3 to 50
	General Government	3 to 20
	Information Systems	3 to 10
	Mun Works	10 to 25
	Museums	3 to 10
	Parking Meters	15
	Parks	8 to 25
	Recreation	3 to 20
	Road	10 to 40
	Sanitary Sewer	5 to 6
	Transit	8 to 15
	Transportation/Traffic	3 to 10
Water	8 to 40	

As field condition information becomes available in time, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset performance age and, therefore, future replacement requirements. The following graph shows the current projection of machinery, equipment and furniture replacements based on a combination of age (85%) and condition assessments (15%).

### Machinery, Equipment & Furniture Replacement Profile



#### 3.5.6 How much money do we need?

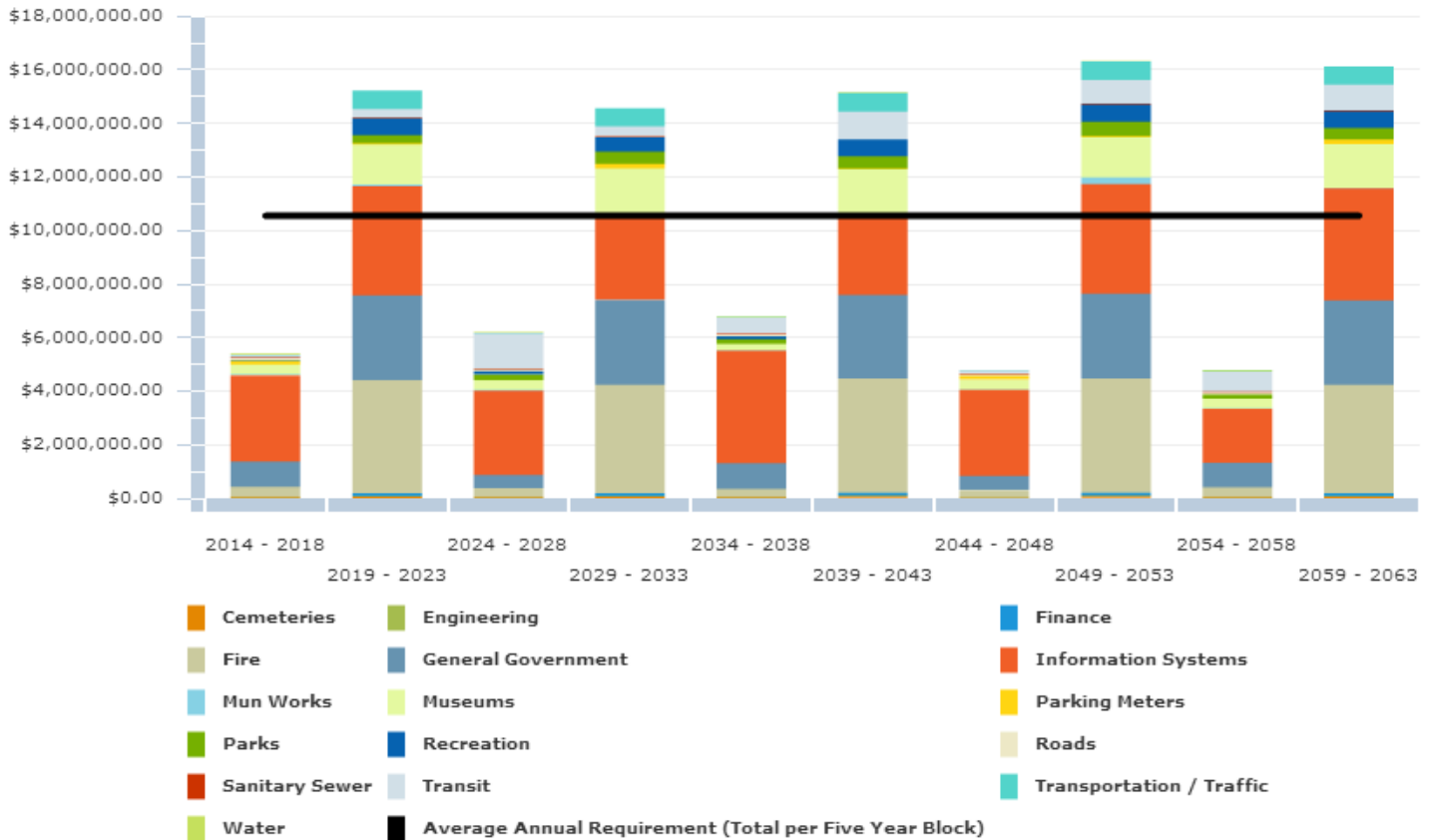
The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the “What is it worth” section above.
2. The timing for individual machinery, equipment & furniture was defined by the replacement year as described in the “When do you need to do it?” section above.
3. All values are presented in 2014 dollars.
4. The analysis was run for a 50 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

#### 3.5.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Niagara Falls' equipment class is approximately **\$2,107,000**. Based on Niagara Falls' current annual funding of **\$335,000**, there is an annual **deficit of \$1,772,000**. Given this deficit, the City received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.

### Sustainable Revenue Requirements per Five Year Block



In conclusion, the machinery, equipment & furniture class, from an age and condition analysis, is generally in good condition; however, approximately 15% is in poor or critical condition. There are replacement needs to be addressed within the next 5 years totaling approximately \$5 million. A general condition assessment program should be established for these assets to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

#### 3.5.8 Recommendations

The City received an overall rating of 'D' for its Machinery, Equipment & Furniture class, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established for the machinery, equipment & furniture class of assets to gain a better understanding of current condition and performance. This will assist with optimizing expenditures within the long and short term capital budgets.
2. Once the above study is complete or underway, the condition data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.



# 3.6 Vehicles

**D**

INFRASTRUCTURE REPORT CARD GRADE



## 3.6 Vehicles

### 3.6.1 What do we own?

The inventory components of the Vehicle class are outlined in the table below. The City of Niagara Falls owns a total of 357 vehicles.

Vehicle Inventory		
Asset Type	Asset Component	Quantity/Units
Vehicles	Arenas	14
	Building	10
	Business Dev	3
	Bylaw	3
	Carpenters	1
	Cemeteries	11
	Clerks - Mail	1
	Commissionaires	1
	Construction	8
	Corp Ser.	1
	Engineering	7
	Environment	5
	Fire	41
	Forestry	8
	Garage	10
	Human Resources	1
	Insp. /Surv.	4
	Parking Control	1
	Parks	35
	Planning	1
	Sewer	13
	Shiffies	2
	Streets	83
	Survey	1
	Traffic	7
	Transit	34
Transit-CAV	7	
Transit-WEGO	27	
Water	17	

The vehicle class data was extracted from the Tangible Capital Asset module of the CityWide software suite.

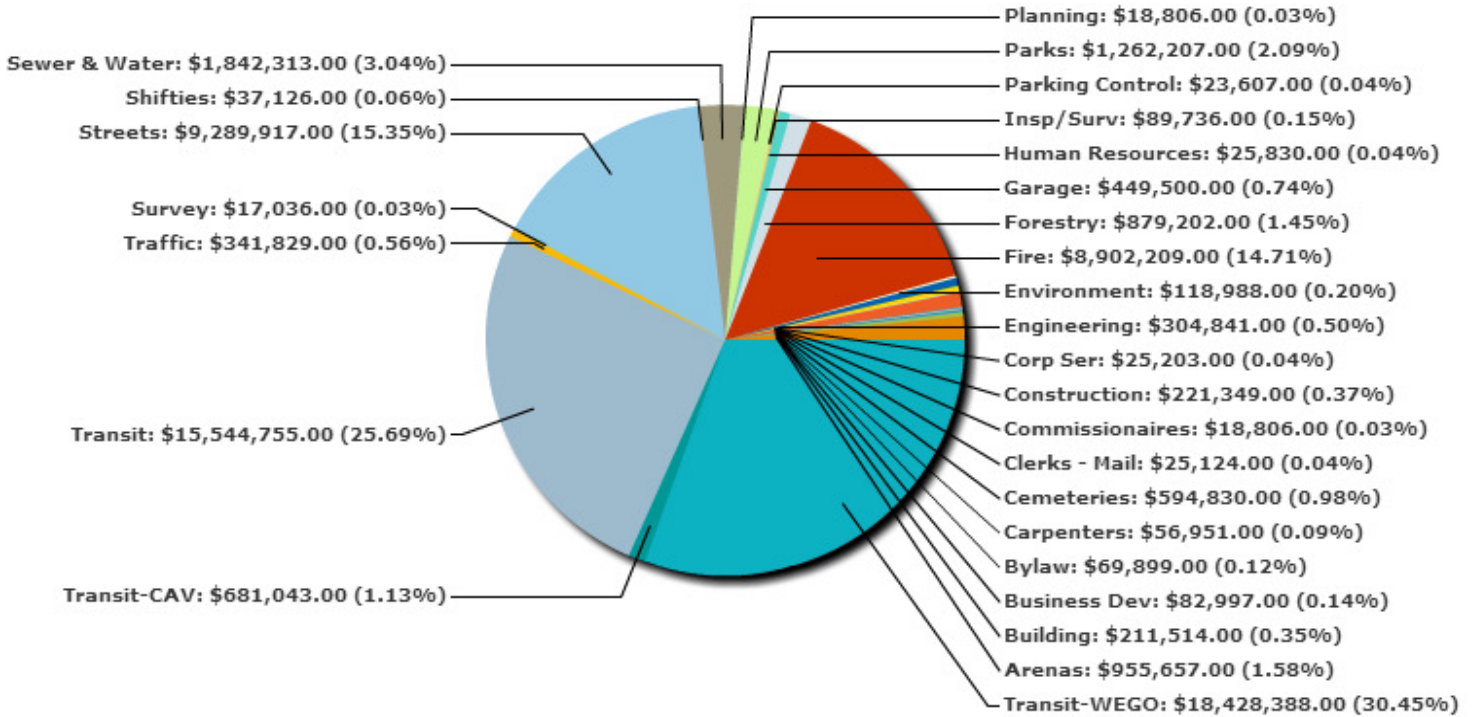
### 3.6.2 What is it worth?

The estimated replacement value of vehicles, in 2014 dollars, is \$60.5 million. The cost per household for the vehicle class is \$1,719 based on 35,199 households.

Vehicle Replacement Value				
Asset Type	Asset Component	Quantity/ Units	2014 Unit Replacement Cost	2014 Overall Replacement Cost (\$)
Vehicle	Arenas	14	CPI Tables	955,657
	Building	10	CPI Tables	211,514
	Business Dev	3	CPI Tables	82,997
	Bylaw	3	CPI Tables	69,899
	Carpenters	1	CPI Tables	56,951
	Cemeteries	11	CPI Tables	594,830
	Clerks - Mail	1	CPI Tables	25,124
	Commissionaires	1	CPI Tables	18,806
	Construction	8	CPI Tables	221,349
	Corp Ser.	1	CPI Tables	25,203
	Engineering	7	CPI Tables	304,841
	Environment	5	CPI Tables	118,988
	Fire	41	CPI Tables	8,902,209
	Forestry	8	CPI Tables	879,202
	Garage	10	CPI Tables	449,500
	Human Resources	1	CPI Tables	25,830
	Insp. /Surv.	4	CPI Tables	89,736
	Parking Control	1	CPI Tables	23,607
	Parks	35	CPI Tables	1,262,207
	Planning	1	CPI Tables	18,806
	Sewer	13	CPI Tables	942,852
	Shifties	2	CPI Tables	37,126
	Streets	83	CPI Tables	9,289,917
	Survey	1	CPI Tables	17,036
	Traffic	7	CPI Tables	341,829
	Transit	34	CPI Tables	15,544,755
Transit-CAV	7	CPI Tables	681,043	
Transit-WEGO	27	CPI Tables	18,428,388	
Water	17	CPI Tables	899,461	
				<b>\$60,519,663</b>

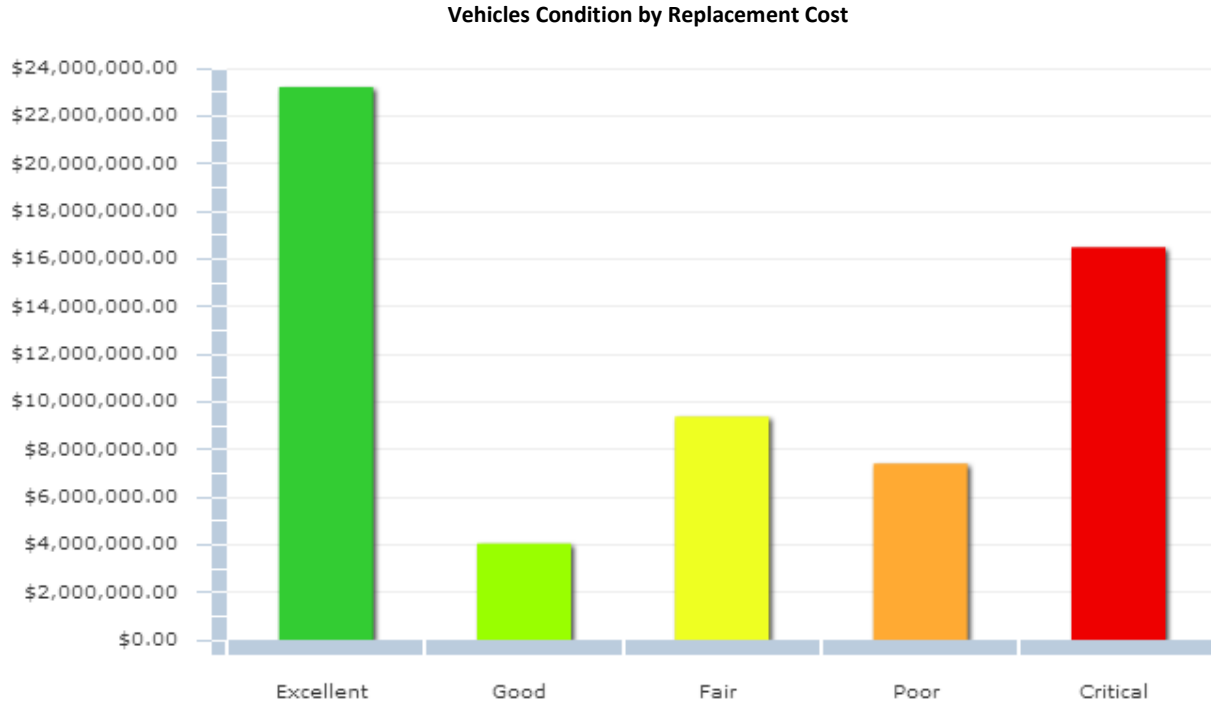
The pie chart below provides a breakdown of each of the network components to the overall system value.

**Vehicle Replacement Value**



### 3.6.3 What condition is it in?

Based on a combination of age and condition data, 61% of the City's vehicles are in fair to excellent condition, with the remaining in poor to critical condition. As such, the City received a Condition vs. Performance rating of 'C'.



### 3.6.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the vehicle class below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

<b>Addressing Asset Needs</b>		
Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr.
Major Maintenance	Maintenance and repair activities – optimally anticipated activities that are included in the annual operating budget.	2nd Qtr.
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service	3rd Qtr.
Replacement	Full asset or component renewal or replacement	4th Qtr.

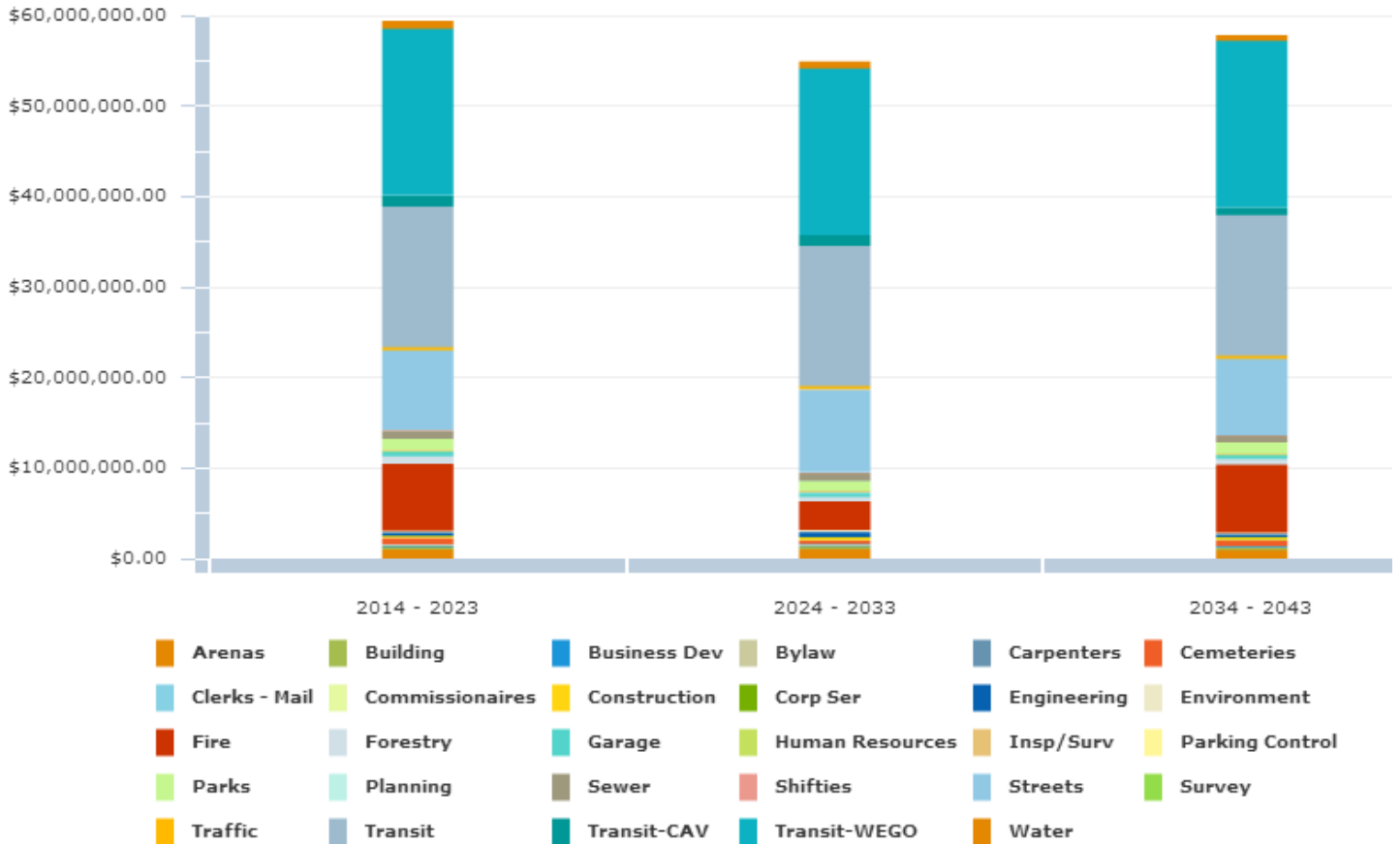
### 3.6.5 When do we need to do it?

For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Vehicle Inventory		
Asset Type	Asset Component	Useful Life (years)
Vehicle	Arenas	8 to 15
	Building	8
	Business Dev	8
	Bylaw	8
	Carpenters	10
	Cemeteries	8 to 20
	Clerks - Mail	8
	Commissionaires	8
	Construction	8 to 20
	Corp Ser	8
	Engineering	8
	Environment	8 to 9
	Fire	5 to 20
	Forestry	10 to 15
	Garage	8 to 30
	Human Resources	8
	Insp/Surv	8
	Parking Control	8
	Parks	5 to 20
	Planning	8
	Sewer	8 to 20
	Shiffies	8
	Streets	8 to 30
	Survey	8
Traffic	8 to 10	
Transit	10 to 25	
Transit-CAV	6 to 8	
Transit-WEGO	10	

As field condition information becomes available in time, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset performance age and, therefore, future replacement requirements. The following graph shows the current projection of vehicle replacements based on age (79%) and condition data (21%).

### Vehicle Replacement Profile



### 3.6.6 How much money do we need?

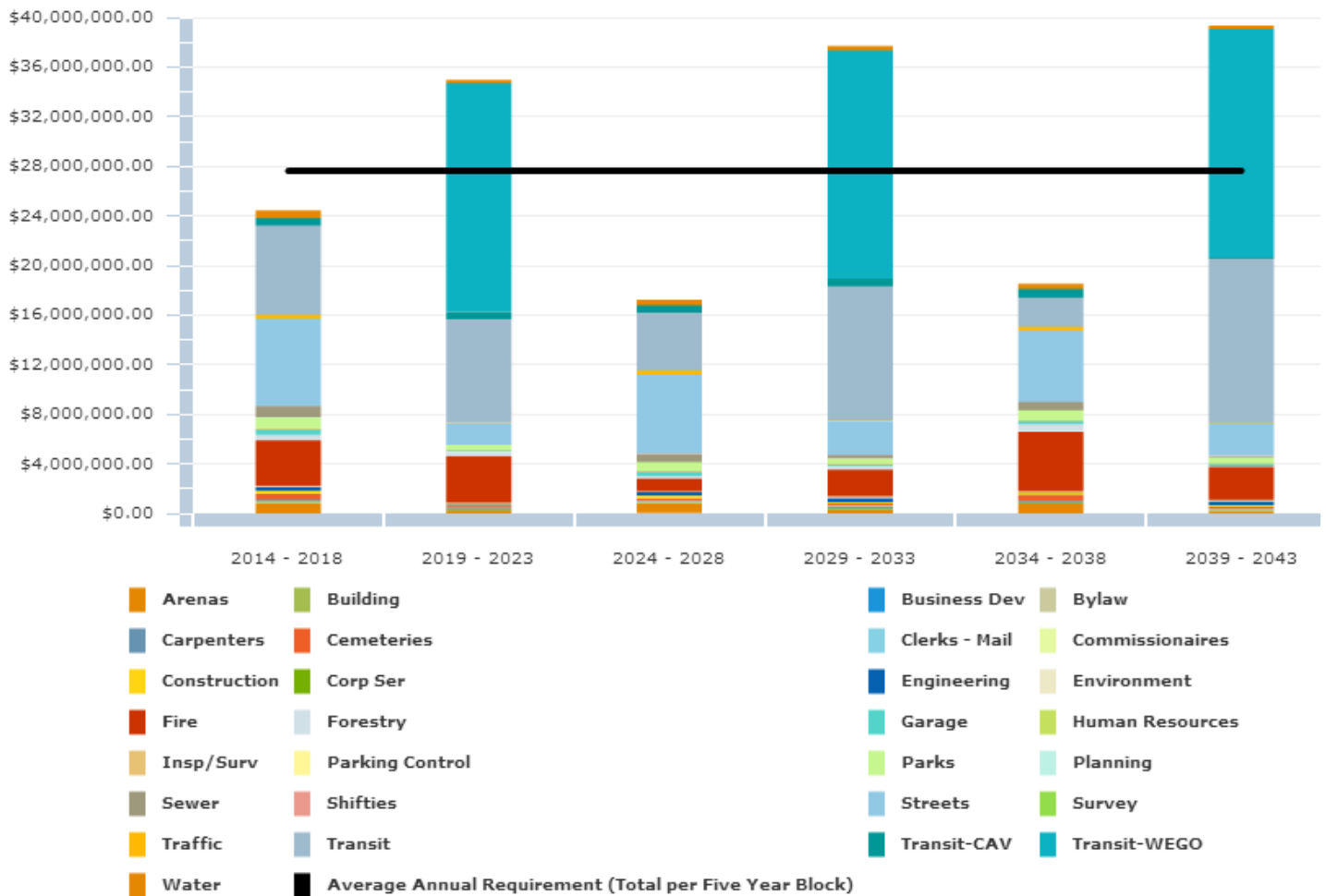
The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual vehicles replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in current (2014) dollars.
4. The analysis was run for a 30 year period to ensure all assets went through one iteration of replacement, therefore providing a sustainable projection.

### 3.6.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Niagara Falls' vehicle class is approximately **\$5,528,000**. Based on Niagara Falls' current annual funding of **\$1,650,000**, there is an annual **deficit of \$3,878,000**. As such, the City received a Funding vs. Need rating of 'F'.

**Vehicle Replacement Profile per Five Year Block**



In conclusion, Niagara Falls' vehicles, based on a combination of age and condition data, are in good condition. There are replacement needs to be addressed within the next 5 years totaling approximately \$24 million. If not already in place a preventative maintenance and life cycle assessment program should be established for these assets to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. Further detail is outlined within the "asset management strategy" section of this AMP.

**3.6.8 Recommendations**

The City received an overall rating of 'D' for its vehicle class, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A preventative maintenance and life cycle assessment program should be established for the vehicle class to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.
2. Once the above studies are complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.



# 4.0 Infrastructure Report Card

CUMULATIVE GPA

**F**

## Infrastructure Report Card The City of Niagara Falls

1. Each asset category was rated on two key, equally weighted (50/50) dimensions: **Condition vs. Performance**, and **Funding vs. Need**.
2. See the "**What condition is it in?**" section for each asset category for its star rating on the Condition vs. Performance dimension.
3. See the "**How do we reach sustainability?**" section for each asset category for its star rating on the Funding vs. Need dimension.
4. The 'Overall Rating' below is the average of the two star ratings converted to a letter grade.

Asset Category	Condition vs. Performance	Funding vs. Need	Overall Grade	Comments
Facilities	<b>C+</b>	<b>F</b>	<b>F</b>	Nearly 63% of the City's facilities are in fair to excellent condition. The average annual revenue required to sustain Niagara Falls' facilities is <b>\$5,278,000</b> . Based on Niagara Falls' current annual funding of <b>\$400,000</b> , there is an annual <b>deficit of \$4,878,000</b> .
Land Improvements	<b>C</b>	<b>F</b>	<b>F</b>	55% of the City's land improvements are in fair to excellent condition. The average annual revenue required to sustain Niagara Falls' land improvements is approximately <b>\$1,023,000</b> . Based on Niagara Falls' current annual funding of <b>\$250,000</b> , there is a <b>deficit of \$773,000</b> .
Machinery, Equipment & Furniture	<b>B</b>	<b>F</b>	<b>D</b>	While 85% of the City's equipment is in fair to excellent condition, nearly 15% of its equipment, based on replacement cost, are in poor to critical condition. The average annual revenue required to sustain Niagara Falls' equipment class is approximately <b>\$2,107,000</b> . Based on Niagara Falls' current annual funding of <b>\$335,000</b> , there is an annual <b>deficit of \$1,772,000</b> .
Vehicles	<b>C</b>	<b>F</b>	<b>D</b>	Nearly 39% of the City's vehicles is in poor to critical condition, with the remaining in fair to excellent condition. The average annual revenue required to sustain Niagara Falls' vehicles is approximately <b>\$5,528,000</b> . Based on Niagara Falls current annual funding of <b>\$1,650,000</b> there is an annual <b>deficit of \$3,878,000</b> .

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## 5.0 Desired Levels of Service

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Desired levels of service are high level indicators, comprising many factors, as listed below, which establish defined quality thresholds at which municipal services should be supplied to the community. They support the organization's strategic goals and are based on customer expectations, statutory requirements, standards, and the financial capacity of a City to deliver those levels of service.

Levels of Service are used:

- to inform customers of the proposed type and level of service to be offered;
- to identify the costs and benefits of the services offered;
- to assess suitability, affordability and equity of the services offered;
- as a measure of the effectiveness of the asset management plan
- as a focus for the AM strategies developed to deliver the required level of service

In order for a City to establish a desired level of service, it will be important to review the key factors involved in the delivery of that service, and the interactions between those factors. In addition, it will be important to establish some key performance metrics and track them over an annual cycle to gain a better understanding of the current level of service supplied.

Within this Asset Management Plan, key factors affecting level of service will be outlined below and some key performance indicators for each asset type will be outlined for further review. This will provide a framework and starting point from which the City can determine future desired levels of service for each general capital class.

### 5.1 Key factors that influence a level of service:

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- Strategic and Corporate Goals
- Legislative Requirements
- Expected Asset Performance
- Community Expectations
- Availability of Finances

#### 5.1.1 Strategic and Corporate Goals

Infrastructure levels of service can be influenced by strategic and corporate goals. Strategic plans spell out where an organization wants to go, how it's going to get there, and helps decide how and where to allocate resources, ensuring alignment to the strategic priorities and objectives . It will help identify priorities and guide how municipal tax dollars and revenues are spent into the future. The level of importance that a community's vision is dependent upon infrastructure, will ultimately affect the levels of service provided or those levels that it ultimately aspires to deliver.

#### 5.1.2 Legislative Requirements

Infrastructure levels of service are directly influenced by many legislative and regulatory requirements. For instance, the Safe Drinking Water Act, the Minimum Maintenance Standards for municipal highways, building codes, and the Accessibility for Ontarians with Disabilities Act are all legislative requirements that prevent levels of service from declining below a certain standard.

#### 5.1.3 Expected Asset Performance

A level of service will be affected by current asset condition, and performance and limitations in regards to safety, capacity, and the ability to meet regulatory and environmental requirements. In addition, the design life of the asset, the maintenance items required, the rehabilitation or replacement schedule of the asset, and the total costs, are all critical factors that will affect the level of service that can be provided.

#### 5.1.4 Community Expectations

Levels of services are directly related to the expectations that the general public has from the infrastructure. For example, the public will have a qualitative opinion on what an acceptable road looks like, and a quantitative one on how long it should take to travel between two locations. Infrastructure costs

are projected to increase dramatically in the future, therefore it is essential that the public is not only consulted, but also be educated, and ultimately make choices with respect to the service levels that they wish to pay for.

### **5.1.5 Availability of Finances**

Availability of finances will ultimately control all aspects of a desired level of service. Ideally, these funds must be sufficient to achieve corporate goals, meet legislative requirements, address an asset's life cycle needs, and meet community expectations. Levels of service will be dictated by availability of funds or elected officials' ability to increase funds, or the community's willingness to pay.

## **5.2 Key Performance Indicators**

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Performance measures or key performance indicators (KPIs) that track levels of service should be specific, measurable, achievable, relevant, and timebound (SMART). Many good performance measures can be established and tracked through the CityWide suite of software products. In this way, through automation, results can be reviewed on an annual basis and adjustments can be made to the overall asset management plan, including the desired level of service targets.

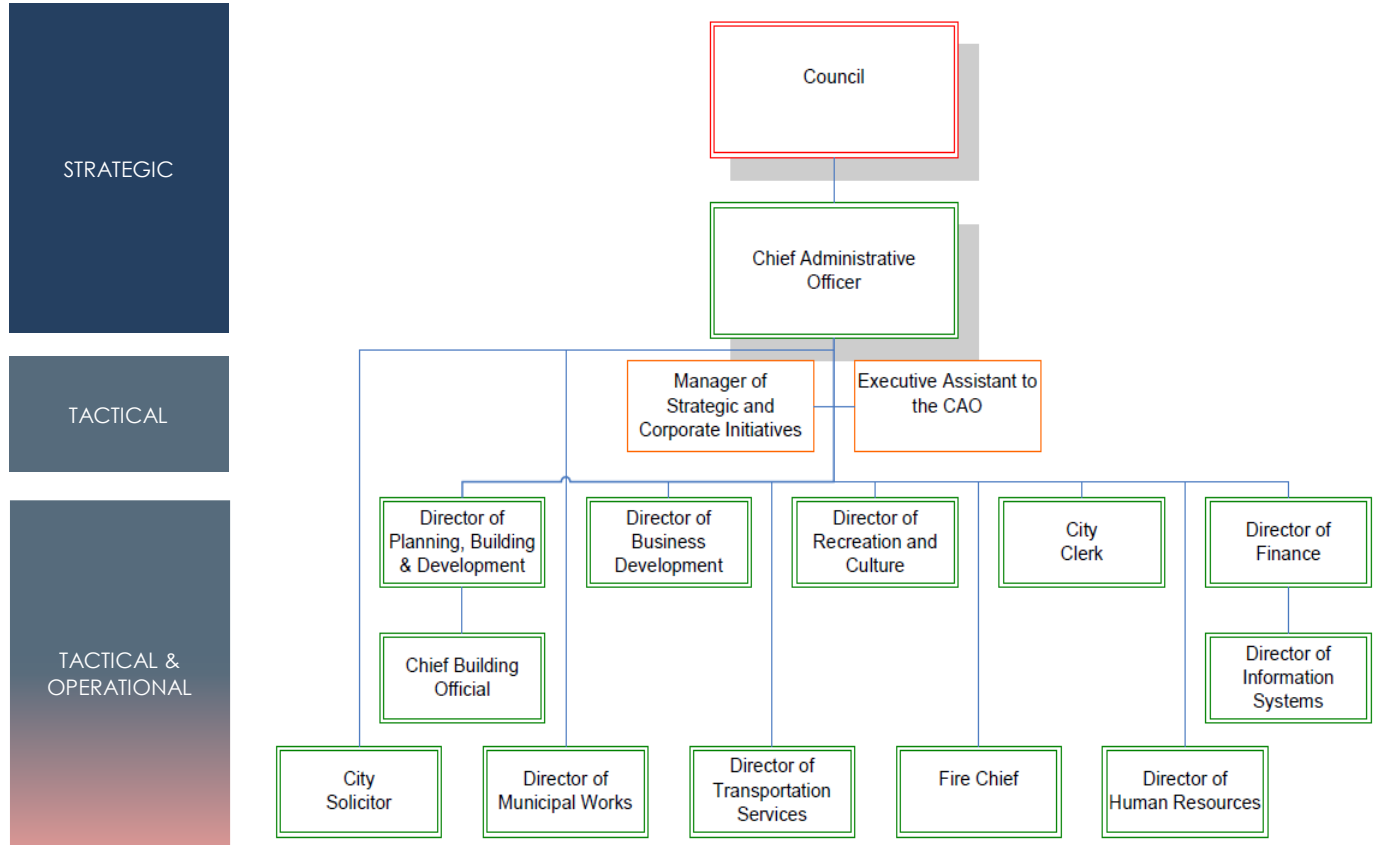
In establishing measures, a good rule of thumb to remember is that maintenance activities ensure the performance of an asset and prevent premature aging, whereas rehab activities extend the life of an asset. Replacement activities, by definition, renew the life of an asset. In addition, these activities are constrained by resource availability (in particular, finances) and strategic plan objectives. Therefore, performance measures should not just be established for operating and maintenance activities, but also for the strategic, financial, and tactical levels of the asset management program. This will assist all levels of program delivery to review their performance as part of the overall level of service provided.

This is a very similar approach to the "balanced score card" methodology, in which financial and non-financial measures are established and reviewed to determine whether current performance meets expectations. The "balanced score card", by design, links day to day operations activities to tactical and strategic priorities in order to achieve an overall goal, or in this case, a desired level of service.

The structure of accountability and level of indicator with this type of process is represented in the following table, modified from the InfraGuide's best practice document, "Developing Indicators and Benchmarks" published in April 2003.

LEVEL OF INDICATOR

MUNICIPAL STRUCTURE



As a note, a caution should be raised over developing too many performance indicators that may result in data overload and lack of clarity. It is better to develop a select few that focus in on the targets of the asset management plan.

Outlined below for each general capital class is a suggested service description, suggested service scope, and suggested performance indicators. These should be reviewed and updated in each iteration of the AMP.

## 5.5 Buildings and Facilities

### 5.5.1 Service Description

The City's facilities enable the City to perform administrative functions and also provide social, cultural, recreational and educational amenities for the community at large.

### 5.5.2 Scope of services

- Administrative (offices and work yards)
- Social (community centers and halls)
- Recreational (arenas and recreation centers)
- Cultural and Educational (museums and heritage)

### 5.5.3 Performance Indicators (reported annually)

<b>Performance Indicators (reported annually)</b>	
Strategic Indicators	<ul style="list-style-type: none"> <li>■ Percentage of total reinvestment compared to asset replacement value</li> <li>■ Completion of strategic plan objectives (related to facilities)</li> </ul>
Financial Indicators	<ul style="list-style-type: none"> <li>■ Annual revenues compared to annual expenditures</li> <li>■ Annual replacement value depreciation compared to annual expenditures</li> <li>■ Repair and maintenance cost per square meter</li> <li>■ Energy, utility and water cost per square meter</li> </ul>
Tactical Indicators	<ul style="list-style-type: none"> <li>■ Percentage of component value replaced</li> <li>■ Overall facility condition index as a percentage of desired condition index</li> <li>■ Annual adjustment in condition indexes</li> <li>■ Annual percentage of new facilities (square meter)</li> <li>■ Percent of facilities rated poor or critical</li> <li>■ Percentage of facilities replacement value spent on operations and maintenance</li> </ul>
Operational Indicators	<ul style="list-style-type: none"> <li>■ Percentage of facilities inspected within the last 5 years</li> <li>■ Number/type of service requests</li> <li>■ Percentage of customer requests responded to within 24 hours</li> </ul>

## 5.6 Parks and Open Spaces

### 5.6.1 Service Description

The City's parks and open space land holdings and related infrastructure provide recreation and conservation of natural resources, and ultimately contribute to the City's natural form, character and scenic value.

### 5.6.2 Scope of services

- Parks, trails, paths
- Parking lots, sidewalks
- Recreation and sports
- Landscaping, etc.

### 5.6.3 Performance Indicators (reported annually)

<b>Performance Indicators (reported annually)</b>	
Strategic Indicators	<ul style="list-style-type: none"> <li>■ Percentage of total reinvestment compared to asset replacement value</li> <li>■ Completion of strategic plan objectives (related to parks &amp; land)</li> </ul>
Financial Indicators	<ul style="list-style-type: none"> <li>■ Annual revenues compared to annual expenditures</li> <li>■ Annual replacement value depreciation compared to annual expenditures</li> <li>■ Cost per capita for supplying parks / trails, etc.</li> <li>■ Maintenance cost per square meter</li> </ul>
Tactical Indicators	<ul style="list-style-type: none"> <li>■ Overall park condition index as a percentage of desired condition index</li> <li>■ Annual adjustment in condition indexes</li> <li>■ Annual percentage of new parkland</li> <li>■ Percent of park land and infrastructure rated poor or critical</li> <li>■ Percentage of replacement value spent on operations and maintenance</li> <li>■ Parkland per capita</li> </ul>
Operational Indicators	<ul style="list-style-type: none"> <li>■ Percentage of park and infrastructure inspected within the last 5 years</li> <li>■ Number/type of service requests</li> <li>■ Percentage of customer requests responded to within 24 hours</li> </ul>

## 5.7 Vehicles

### 5.7.1 Service Description

The City's diverse fleet of vehicles provides support to multiple departments as part of their delivery of various public programs and services to the citizens.

### 5.7.2 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	<ul style="list-style-type: none"> <li>■ Percentage of total reinvestment compared to asset replacement value</li> <li>■ Completion of strategic plan objectives (related to fleet)</li> </ul>
Financial Indicators	<ul style="list-style-type: none"> <li>■ Annual revenues compared to annual expenditures</li> <li>■ Annual replacement value depreciation compared to annual expenditures</li> <li>■ Operating and maintenance cost per fleet category</li> <li>■ Fuel costs per fleet category</li> </ul>
Tactical Indicators	<ul style="list-style-type: none"> <li>■ Percentage of all vehicles replaced</li> <li>■ Average age of fleet vehicles</li> <li>■ Percent of vehicles rated poor or critical</li> <li>■ Percentage of fleet replacement value spent on operations and maintenance</li> </ul>
Operational Indicators	<ul style="list-style-type: none"> <li>■ Average downtime per fleet category</li> <li>■ Average utilization per fleet category and/or each vehicle</li> <li>■ Ratio of preventative maintenance repairs vs reactive repairs</li> <li>■ Percent of vehicles that received preventative maintenance</li> <li>■ Number/type of service requests</li> <li>■ Percentage of customer requests responded to within 24 hours</li> </ul>

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## 6.0 Asset Management Strategy

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### 6.1 Objective

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To outline and establish a set of planned actions, based on best practice, that will enable the assets to provide a desired and sustainable level of service, while managing risk, at the lowest life cycle cost.

The Asset Management Strategy will develop an implementation process that can be applied to the needs identification and prioritization of renewal, rehabilitation, and maintenance activities. This will assist in the production of a 10 year plan, including growth projections, to ensure the best overall health and performance of the City's general capital and infrastructure.

This section includes an overview of condition assessment techniques for each asset class; the life cycle interventions required, including interventions with the best ROI; and prioritization techniques, including risk, to determine which priority projects should move forward into the budget first.

### 6.2 Non-Infrastructure Solutions and Requirements

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The City should explore, as requested through the provincial requirements, which non-infrastructure solutions should be incorporated into the budgets for the facilities, land improvement, vehicle and machinery, equipment & furniture programs. Non-Infrastructure solutions are such items as studies, policies, condition assessments, consultation exercises, etc. that could potentially extend the life of assets or lower total asset program costs in the future.

Typical solutions for a City include linking the asset management plan to the strategic plan, growth and demand management studies, general capital master plans, better integrated general capital and land use planning, public consultation on levels of service, and condition assessment programs. As part of future asset management plans, a review of these requirements should take place, and a portion of the capital budget should be dedicated for these items in each programs budget.

It is recommended, under this category of solutions, that the City implement holistic condition assessment programs for their facility, land improvements, machinery, equipment & furniture and vehicle networks. This will lead to higher understanding of general capital needs, enhanced budget prioritization methodologies, and a clearer path of what is required to achieve sustainable general capital programs.

### 6.3 Condition Assessment Programs

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The foundation of good asset management practice is based on having comprehensive and reliable information on the current condition of the general capital. Municipalities need to have a clear understanding regarding performance and condition of their assets, as all management decisions regarding future expenditures and field activities should be based on this knowledge. An incomplete understanding about an asset may lead to its premature failure or premature replacement.

Some benefits of holistic condition assessment programs within the overall asset management process are listed below:

- Understanding of overall network condition leads to better management practices
- Allows for the establishment of rehabilitation programs
- Prevents future failures and provides liability protection
- Potential reduction in operation / maintenance costs
- Accurate current asset valuation
- Allows for the establishment of risk assessment programs
- Establishes proactive repair schedules and preventive maintenance programs
- Avoids unnecessary expenditures



- Extends asset service life therefore improving level of service
- Improves financial transparency and accountability
- Enables accurate asset reporting which, in turn, enables better decision making

Condition assessment can involve different forms of analysis such as subjective opinion, mathematical models, or variations thereof, and can be completed through a very detailed or very cursory approach.

When establishing the condition assessment of an entire asset class, the cursory approach (metrics such as good, fair, poor, critical) is used. This will be a less expensive approach when applied to thousands of assets, yet will still provide up to date information, and will allow for detailed assessment or follow up inspections on those assets captured as poor or critical condition later.

The following section outlines condition assessment programs available for facilities, land improvement, vehicles and machinery, equipment & furniture networks that would be useful for the City.

### 6.3.5 Facility Inspections

The most popular and practical type of facility assessment involves qualified groups of trained industry professionals (engineers or architects) performing an analysis of the condition of a group of facilities, and their components, that may vary in terms of age, design, construction methods, and materials. This analysis can be done by walk-through inspection, mathematical modeling, or a combination of both. But the most accurate way of determining the condition requires a walk-through to collect baseline data.

The following 5 asset classifications are typically inspected:

- **Site Components** – property around the facility and includes the outdoor components such as utilities, signs, stairways, walkways, parking lots, fencing, courtyards and landscaping.
- **Structural Components** – physical components such as the foundations, walls, doors, windows, roofs.
- **Electrical Components** – all components that use or conduct electricity such as wiring, lighting, electric heaters, and fire alarm systems
- **Mechanical Components** – components that convey and utilize all non-electrical utilities within a facility such as gas pipes, furnaces, boilers, plumbing, ventilation, and fire extinguishing systems
- **Vertical movement** – components used for moving people between floors of buildings such as elevators, escalators and stair lifts.

The data collection on the above components typically includes: type and category of component; estimated age; current condition; estimated repair, rehabilitation or replacement date; and estimated cost for the repair, rehabilitation or replacement.

Once collected, this type of information can be uploaded into the CityWide software database in order for short and long term repair, rehabilitation and replacement reports to be generated to assist with programming the short and long term maintenance and capital budgets.

In addition, reports can be generated for each facility that accumulate all current repair, rehabilitation and replacement requirements and generate a facility condition index (FCI) for the overall facility. This allows senior management to assess the overall state of the building portfolio and determine which facilities have the greatest overall needs.

The FCI of a facility is represented as a percentage and is calculated by taking the total renewal costs of components in a given year and dividing that figure by the total replacement value of the facility itself. A high FCI value reflects a high renewal requirement and therefore a poor condition facility.

A facility with an FCI of less than 5% is in good condition, between 5% and 10% is in fair condition, between 10% and 30% poor condition, and over 30% is considered critical condition.

$$\text{F. C. I. (Facility Condition Index)} = \frac{\text{Renewal Requirement in a Given Year}}{\text{Replacement Value of an Asset}}$$

Good < 5%,                      Fair 5 – 10%,                      Poor 10% - 30%,                      Critical > 30%

### 6.3.6 Parks and Open Spaces

There is currently no industry standard in place for the process or protocols in regards to the inspection of parks and their associated infrastructure. However, through the emergence of asset management as a discipline within North America, many municipalities are inspecting their parks with a similar approach to that of a facility condition inspection. The approach works well because the inspection is completed on a component by component basis. A facility has an external shell with many internal components that have unique life cycle requirements (i.e. foundation, windows, HVAC unit, etc.) and a park has an external boundary containing many internal components with unique life cycle requirements also (i.e. fences, pathways, bleachers, sport fields, etc.).

The park inspection will involve qualified groups of trained industry professionals (engineers or landscape architects) performing an analysis of the condition of a group of parks and their components. The most accurate way of determining the condition requires a walk-through to collect baseline data.

The following key asset classifications are typically inspected:

- **Physical Site Components** – physical components on the site of the park such as: fences, utilities, stairways, walkways, parking lots, irrigation systems, monuments, fountains.
- **Recreation Components** – physical components such as: playgrounds, bleachers, back stops, splash pads, and benches.
- **Land Site Components** – land components on the site of the park such as: landscaping, sports fields, trails, natural areas, and associated drainage systems.
- **Minor Park Facilities** – small facilities within the park site such as: sun shelters, washrooms, concession stands, change rooms, storage sheds.

The data collection on the above components typically includes: type and category of component; estimated life cycle; estimated age; current condition; estimated repair, rehabilitation or replacement date; and estimated cost for the repair, rehabilitation or replacement.

Once collected this type of information can be uploaded into the CityWide software database in order for short and long term repair, rehabilitation and replacement reports to be generated to assist with programming the short and long term maintenance and capital budgets.

In addition, reports can be generated for each park that accumulate all current repair, rehabilitation and replacement requirements and generate a park condition index (PCI) for the overall park. This allows senior management to assess the overall state of the park portfolio and determine which parks have the greatest overall needs.

The PCI of a park is represented as a percentage and is calculated by taking the total renewal costs of components in a given year and dividing that figure by the total replacement value of the park itself. A high PCI value reflects a high renewal requirement and therefore a poor condition park.

A park with an PCI of less than 5% is in good condition, between 5% and 10% is in fair condition, between 10% and 30% poor condition, and over 30% is considered critical condition.

$$\begin{array}{l} \text{P. C. I.} \\ \text{(Park Condition Index)} \end{array} = \frac{\text{Renewal Requirement in a Given Year}}{\text{Replacement Value of an Asset}}$$

Good < 5%,                  Fair 5 – 10%,                  Poor 10% - 30%,                  Critical > 30%

**6.3.7 Vehicle (Rolling Stock) Inspections and Maintenance**

The typical approach to optimizing the maintenance expenditures of a corporate fleet of vehicles is through routine vehicle inspections, routine vehicle servicing, and an established routine preventative maintenance program.

Most, if not all, makes and models of vehicles are supplied with maintenance manuals that define the appropriate schedules and routines for typical maintenance and servicing and also more detailed restoration or rehabilitation protocols.

The primary goal of good vehicle maintenance is to avoid or mitigate the consequence of failure of equipment or parts. An established preventative maintenance program serves to ensure this, as it will consist of scheduled inspections and follow up repairs of vehicles and equipment in order to decrease breakdowns and excessive downtimes.

A good preventative maintenance program will include partial or complete overhauls of equipment at specific periods, including oil changes, lubrications, fluid changes and so on. In addition, workers can record equipment or part deterioration so they can schedule to replace or repair worn parts before they fail. The ideal preventative maintenance program would move further and further away from reactive repairs and instead towards the prevention of all equipment failure before it occurs.

Once a good preventative maintenance program is defined and scheduled for various categories and types of vehicles it becomes essential to have good software tools to track the scheduling and performance of the overall program. There are municipal maintenance software programs, such as CityWide, that are ideal for this purpose as they are designed to enable public works departments to prioritize, schedule and track projects including preventative maintenance schedules. In addition these software applications typically calculate resources utilized, inventory consumed, as well as direct and indirect labor, and will provide full management reporting.

It is recommended that a preventative maintenance routine is defined and established for all fleet vehicles and that a software application such as Citywide is utilized for the overall management of the program.

## 6.4 AM Strategy – Life Cycle Analysis Framework

An industry review was conducted to determine which life cycle activities can be applied at the appropriate time in an asset's life, to provide the greatest additional life at the lowest cost. In the asset management industry, this is simply put as doing the right thing to the right asset at the right time. If these techniques are applied across entire asset networks or portfolios (e.g., the entire facilities network), the City could gain the best overall asset condition while expending the lowest total cost for those programs.

### 6.4.6 Buildings and Facilities

The best approach to develop a 10 year needs list for the City's facility portfolio would be to have the engineers or architects who perform the facility inspections to also develop a complete portfolio maintenance requirements report and rehabilitation and replacement requirements report, and also identify additional detailed inspections and follow up studies as required. This may be performed as a separate assignment once all individual facility audits / inspections are complete. Of course, if the inspection data is housed or uploaded into the CityWide software, then these reports can be produced automatically from the system.

The above reports could be considered the beginning of a 10 year maintenance and capital plan, however, within the facilities industry there are other key factors that should be considered to determine over all priorities and future expenditures. Some examples would be functional / legislative requirements, energy conservation programs and upgrades, customer complaints and health and safety concerns, and also customer expectations balanced with willingness to pay initiatives.

#### Legislative requirements:

Acts to consider as part of the 10 year plan would be:

*Accessibility for Ontarians with Disabilities Act* By January 2012, all public sector in Ontario were required to comply with the customer service standard under the Accessibility for Ontarians with Disabilities Act, 2005 (AODA). This means that each organization will have to establish policies, practices and procedures on providing goods and services to people with disabilities.

*The Building Code Act* (BCA) and the Ontario Building Code (OBC) govern the construction, demolition, and renovation of buildings by setting certain minimum performance and safety standards.

The initial 10 year requirements listings produced from the facility audits / inspections should be reviewed to ensure capital replacements and upgrades are compliant with industry standards and legislation and project prioritizations and estimates should be adjusted accordingly.

#### Energy Conservation

There are significant savings to be achieved within a facility portfolio through the implementation of energy conservation programs and the associated industry incentives available upon the market. Some examples would be:

##### Mechanical & Structural components

- Improve mechanical systems by replacing old inefficient systems (e.g. HVAC, boilers) with new high efficiency systems; investigate if incentives for these improvements are available from utilities, federal government, etc.
- Investigate the tightness and insulation of the building envelope in all properties and develop programs for improvement
- Reduce solar gain through windows with awnings or landscaping.
- Replace/upgrade all toilets with high efficiency toilets

##### Electrical components

- Install occupancy sensors
- Implement energy efficiency lighting using compact fluorescent light bulbs and install timers where appropriate to control outside lights
- Install fully programmable thermostats within all building units

Energy conservation should be studied in detail for the entire facilities portfolio and upgrade and replacement programs should be implemented through the capital program as part of the 10 year plan.

#### **Customer expectation and affordability or willingness to pay**

As discussed within the "Desired Levels of Service" section of this AMP, levels of service are directly related to the expectations of the customer and also their ability to pay for a level of service.

Community facilities, such as recreation centers, in-door pools, arenas, etc. are infrastructure service areas where customer surveys can be conducted to gain a better sense of what customer expectations are and to assist in the establishment of a standard level of provision or service. Information could be collected on: safety; security; esthetics; environment; comfort; affordability; cleanliness; functional use of space; etc. This would require a much more detailed review, however, the establishment of a level of service based on customer needs and expectations, while still balancing affordability, would directly affect the prioritization of programs and projects brought forward into the 10 year facility budget.

It is recommended that the City develop a life cycle framework for the facility portfolio based on a detailed review of the above factors and that the results are brought forward into future iterations of this AMP.

#### **6.4.7 Parks and Open Spaces**

The best approach to develop a 10 year needs list for the City's park and open space portfolio would be to have the engineers or landscape architects who perform the park inspections to also develop a complete portfolio maintenance requirements report and rehabilitation and replacement requirements report, and also identify additional detailed inspections and follow up studies as required. This may be performed as a separate assignment once all individual park audits / inspections are complete. Of course, if the inspection data is housed or uploaded into the CityWide software, then these reports can be produced automatically from the system.

It is important to note that the land site components within a park, trails and sports fields for instance, do not typically require full replacement, but instead a properly defined perpetual maintenance program that provides a defined level of service balanced to the overall use of those facilities. This could be provided as a separate assignment from a professionally trained landscape architect.

#### **6.4.8 Vehicle (Rolling Stock)**

##### **Life Cycle Requirements**

The best approach to develop a 10 year needs list for the City's vehicles would first be through a defined preventative maintenance program as described in the "Fleet inspections and maintenance section", and secondly through an optimized life cycle vehicle replacement schedule. As previously described, the preventative maintenance program would serve to determine budget requirements for operating and minor capital expenditures for part renewal and major refurbishments and rehabilitations. An optimized vehicle replacement program will ensure a vehicle is replaced at the correct point in time in order to minimize overall cost of ownership, minimize costly repairs and downtime, while maximizing potential re-sale value. There is significant benchmarking information available within the Fleet industry in regards to vehicle life cycles which can be used to assist in this process. Once appropriate replacement schedules are established the short and long term budgets can be funded accordingly.

##### **Fleet Utilization**

One of the most critical factors in managing a fleet of vehicles and the associated costs is utilization. Over utilized vehicles may be used for additional shifts or operated in demanding environments while other vehicles are significantly under-utilized. To ensure preventative maintenance programs and vehicle replacement schedules are optimized, vehicle utilization must be managed and tracked.

A good performance indicator to assist with managing fleet utilization is tracking engine hours of actual vehicle usage, whether it's being driven or not, as kilometers driven is not always a meaningful way to assess whether a vehicle is being utilized fully. Better management of utilization can lower costs by reducing preventative maintenance for some vehicles, selling certain vehicles, encouraging vehicle pooling, outsourcing the use of certain vehicle types, and encouraging the use of employee vehicles.

### Green Fleets

Due to the significant increase of fuel costs many fleet management groups are increasingly looking towards the greening of their fleets to lower future operating and maintenance costs. The City of London, UK, defines a green fleet "as one that does its best to minimize fuel consumption and exhaust emissions. It also seeks to minimize the amount of traffic it generates by utilizing vehicles efficiently and by using alternatives wherever possible". This area would require an individually tailored study for any City to project what type of savings could be achieved over the long term.

The above reports could be considered the beginning of a 10 year maintenance and capital plan; however, further work would be required to assimilate functional improvements and requirements into the long term plan.

## 6.5 Growth and Demand

Typically a City will have specific plans associated with population growth. It is essential that the asset management strategy should address not only the existing infrastructure, as above, but must include the impact of projected growth on defined project schedules and funding requirements. Projects would include the funding of the construction of new general capital and infrastructure, and/or the expansion of existing infrastructure to meet new demands. The City should enter these projects into the CityWide software in order to be included within the short and long term budgets as required.

## 6.6 Project Prioritization

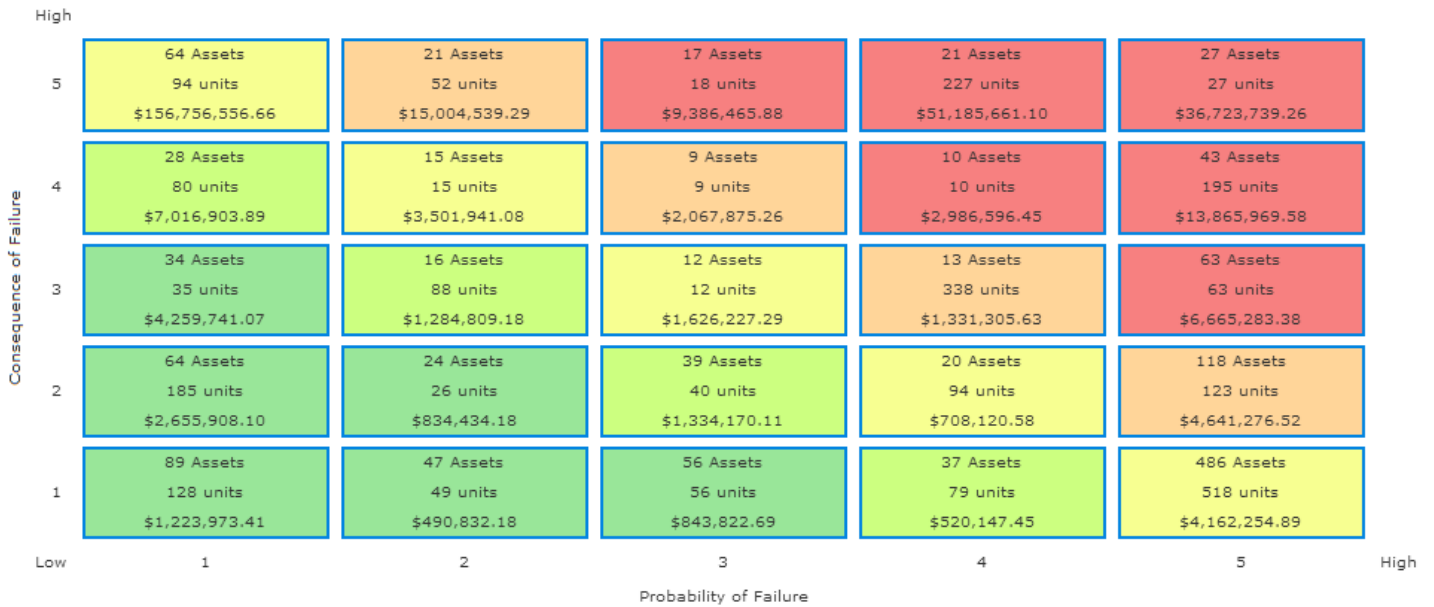
The above techniques and processes when established for the facilities, land improvement, vehicles, machinery, equipment & furniture will supply a significant listing of potential projects. Typically the general capital and infrastructure needs will exceed available resources and therefore project prioritization parameters must be developed to ensure the right projects come forward into the short and long range budgets. An important method of project prioritization is to rank each project, or each piece of infrastructure or general capital, on the basis of how much risk it represents to the organization.

### 6.6.1 Risk Matrix and Scoring Methodology

Risk within the general capital and infrastructure industry is often defined as the probability (likelihood) of failure multiplied by the consequence of that failure.

$$\text{RISK} = \text{LIKELIHOOD OF FAILURE} \times \text{CONSEQUENCE OF FAILURE}$$

The likelihood of failure relates to the current condition state of each asset, whether they are in excellent, good, fair, poor or critical condition, as this is a good indicator regarding their future risk of failure. The consequence of failure relates to the magnitude, or overall effect, that an asset's failure will cause. For instance, a small diameter water main break in a sub division may cause a few customers to have no water service for a few hours, whereby a large trunk water main break outside a hospital could have disastrous effects. The following table represents the scoring matrix for risk:



All of the City's assets analyzed within this asset management plan have been given both a likelihood of failure score and a consequence of failure score within the CityWide software.

The following risk scores have been developed at a high level for each asset class within the CityWide software system. It is recommended that the City undertake a detailed study to develop a more tailored suite of risk scores, particularly in regards to the consequence of failure, and that this be updated within the CityWide software with future updates to this Asset Management Plan.

The current scores that will determine budget prioritization currently within the system are as follows:

**All assets:**

The Likelihood of Failure score is based on the condition of the assets:

Likelihood of Failure: All Assets	
Asset condition	Likelihood of failure
Excellent condition	Score of 1
Good condition	Score of 2
Fair condition	Score of 3
Poor condition	Score of 4
Critical condition	Score of 5

**Facilities:** (based on valuation):

The consequence of failure score for this initial AMP is based upon the replacement value of the facility component. The higher the value, probably the larger and more important the component to the overall function of the facility and therefore probably the higher the consequential risk of failure:

Consequence of Failure: Facilities	
Replacement Value	Consequence of failure
Up to \$50k	Score of 1
\$51k to \$100k	Score of 2
\$101k to \$300k	Score of 3
\$301k to \$1 million	Score of 4
Over \$1 million	Score of 5

**Land Improvements:** (based on valuation):

The consequence of failure score for this initial AMP is based upon the replacement value of the asset or component. The higher the value, probably the larger and more important the component and therefore probably the higher the consequential risk of failure:

Consequence of Failure: Land Improvements	
Replacement Value	Consequence of failure
Up to \$50k	Score of 1
\$51k to \$100k	Score of 2
\$101k to \$300k	Score of 3
\$301k to \$500k	Score of 4
Over \$500k	Score of 5

**Machinery, Equipment and Furniture:** (based on valuation):

The consequence of failure score for this initial AMP is based upon the replacement value of the asset or component. The higher the value, probably the larger and more important the component and therefore probably the higher the consequential risk of failure:

Consequence of Failure: Machinery, Equipment and Furniture	
Replacement Value	Consequence of failure
Up to \$10k	Score of 1
\$10k to \$20k	Score of 2
\$20k to \$40k	Score of 3
\$40k to \$80k	Score of 4
Over \$80k	Score of 5

**Vehicles:** (based on valuation):

The consequence of failure score for this initial AMP is based upon the replacement value of the asset or component. The higher the value, probably the larger and more important the component and therefore probably the higher the consequential risk of failure:

Consequence of Failure: Vehicles	
Replacement Value	Consequence of failure
Up to \$20k	Score of 1
\$21k to \$75k	Score of 2
\$76k to \$150k	Score of 3
\$151k to \$300k	Score of 4
Over \$300k	Score of 5

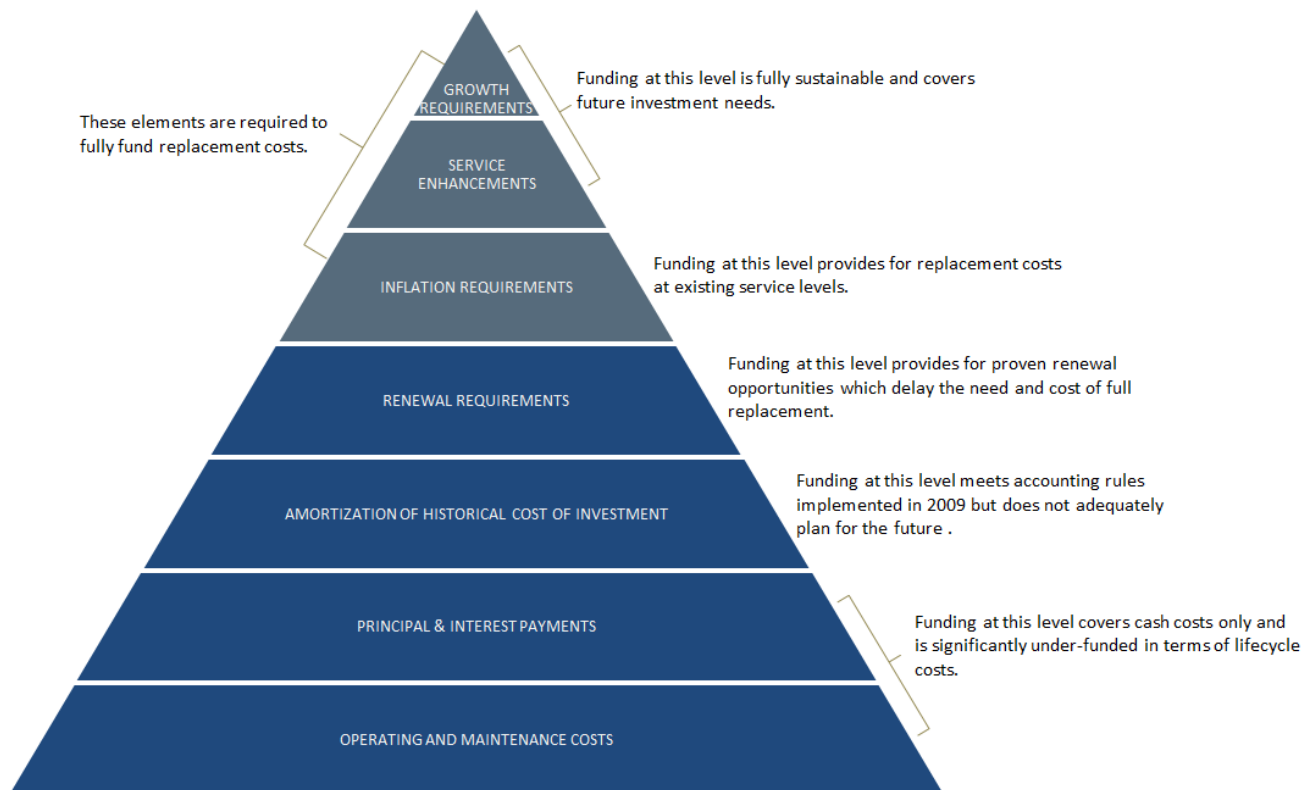


# 7.0 Financial Strategy

## 7.1 General overview of financial plan requirements

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow Niagara Falls to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

The following pyramid depicts the various cost elements and resulting funding levels that should be incorporated into AMPs that are based on best practices.



This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

- a) the financial requirements (as documented in the SOTI section of this report) for:
  - existing assets
  - existing service levels
  - requirements of contemplated changes in service levels (none identified for this plan)
  - requirements of anticipated growth (none identified for this plan)
- b) use of traditional sources of municipal funds:
  - tax levies
  - user fees
  - reserves
  - debt
  - development charges

- c) use of non-traditional sources of municipal funds:
  - reallocated budgets
  - partnerships
  - procurement methods
- d) use of senior government funds:
  - gas tax
  - grants (not included in this plan due to Provincial requirements for firm commitments)

If the financial plan component of an AMP results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a City's approach to the following:

- a) in order to reduce financial requirements, consideration has been given to revising service levels downward
- b) all asset management and financial strategies have been considered. For example:
  - if a zero debt policy is in place, is it warranted? If not, the use of debt should be considered.
  - do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

This AMP includes recommendations that avoid long-term funding deficits.

## 7.2 Financial information relating to Niagara Falls' AMP

### 7.2.1 Funding objective

We have developed scenarios that would enable Niagara Falls' to achieve full funding within 5 to 20 years for the following assets:

- a) **Tax funded assets:** Facilities; Land Improvements; Vehicles; Machinery, Equipment & Furniture.

For each scenario developed we have included strategies, where applicable, regarding the use of tax revenues, user fees, reserves and debt.

## 7.3 Tax funded assets

### 7.3.1 Current funding position

Tables 1 and 2 outline, by asset category, Niagara Falls' average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Average Annual Investment Required	2014 Annual Funding Available				Annual Deficit/Surplus
		Taxes	Gas Tax	Other	Total Funding Available	
Facilities	5,278,000	400,000	0	0	400,000	4,878,000
Land Improvements	1,023,000	250,000	0	0	250,000	773,000
Vehicles	5,528,000	1,250,000	400,000	0	1,650,000	3,878,000
Machinery, Equipment & Furniture	2,107,000	335,000	0	0	335,000	1,772,000
<b>Total</b>	<b>13,936,000</b>	<b>2,235,000</b>	<b>400,000</b>	<b>0</b>	<b>2,635,000</b>	<b>11,301,000</b>

### 7.3.2 Recommendations for full funding

The average annual investment requirement for the above categories is \$13,936,000. Annual revenue currently allocated to these assets for capital purposes is \$2,635,000 leaving an annual deficit of \$11,301,000. To put it another way, these categories are currently funded at 19% of their long-term requirements.

In 2014, Niagara Falls has annual tax revenues of \$55,130,000. As illustrated in table 2, without consideration of any other sources of revenue, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Facilities	8.8%
Land Improvements	1.4%
Vehicles	7.0%
Machinery, Equipment & Furniture	3.2%
<b>Total</b>	<b>20.4%</b>

Through table 3, we have expanded the above scenario to present multiple options. Due to the significant increases required, we have provided phase-in options of up to 20 years:

	Tax Revenues			
	5 Years	10 Years	15 Years	20 Years
Annual tax increases required	4.1%	2.0%	1.4%	1.0%

Considering the above information, and the fact that a 2.0% annual tax phase-in for 10 years was recommended for the asset categories of roads, bridges and storm sewers, we recommend the 20 year option in table 3 for the asset categories covered by this AMP. This involves full funding being achieved over 20 years by:

- a) increasing tax revenues by 1.0% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- b) allocating \$400,000 of gas tax revenue to the vehicles category.
- c) increasing existing and future general capital budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

**Notes:**

1. As in the past, **periodic** senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place.
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled (to 2050), the recommendations do require prioritizing capital projects to fit the resulting annual funding available. As of 2014, age based data shows a pent up investment demand of \$21,792,000 for facilities, \$8,756,000 for land improvements, \$14,091,000 for vehicles and \$2,148,000 for machinery, equipment & furniture. Prioritizing future projects will require the age based data to be replaced by condition based data. Although our recommendations include no further use of debt, the results of the condition based analysis may require otherwise.

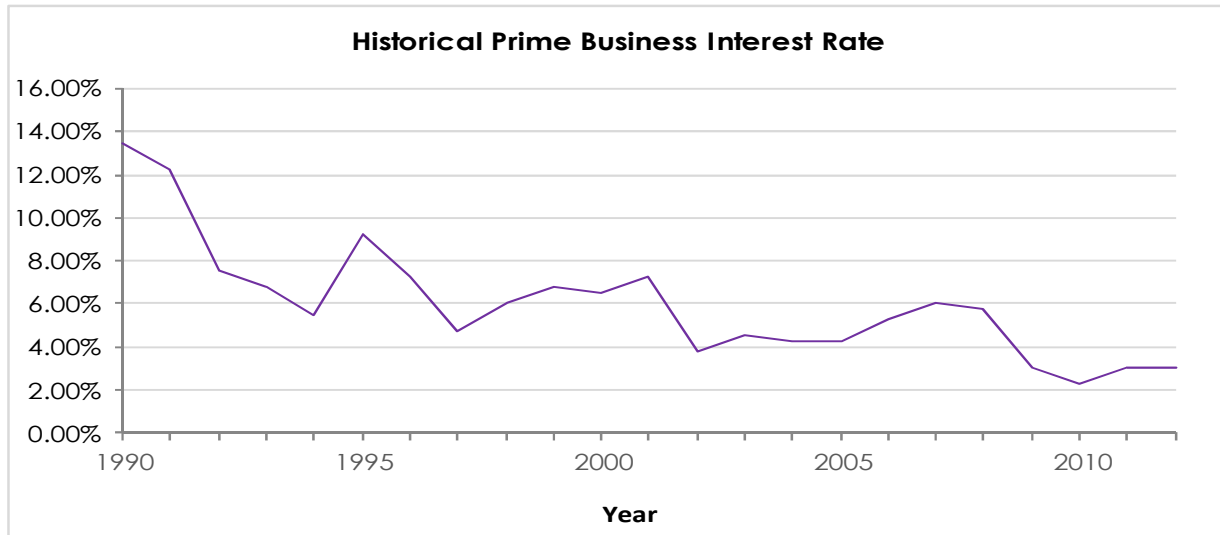
## 7.4 Use of debt

For reference purposes, table 7 outlines the premium paid on a project if financed by debt. For example, a \$1M project financed at 3.0%<sup>16</sup> over 15 years would result in a 26% premium or \$260,000 of increased costs due to interest payments. For simplicity, the table does not take into account the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
<b>7.0%</b>	22%	42%	65%	89%	115%	142%
<b>6.5%</b>	20%	39%	60%	82%	105%	130%
<b>6.0%</b>	19%	36%	54%	74%	96%	118%
<b>5.5%</b>	17%	33%	49%	67%	86%	106%
<b>5.0%</b>	15%	30%	45%	60%	77%	95%
<b>4.5%</b>	14%	26%	40%	54%	69%	84%
<b>4.0%</b>	12%	23%	35%	47%	60%	73%
<b>3.5%</b>	11%	20%	30%	41%	52%	63%
<b>3.0%</b>	9%	17%	26%	34%	44%	53%
<b>2.5%</b>	8%	14%	21%	28%	36%	43%
<b>2.0%</b>	6%	11%	17%	22%	28%	34%
<b>1.5%</b>	5%	8%	12%	16%	21%	25%
<b>1.0%</b>	3%	6%	8%	11%	14%	16%
<b>0.5%</b>	2%	3%	4%	5%	7%	8%
<b>0.0%</b>	0%	0%	0%	0%	0%	0%

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:

<sup>16</sup> Current municipal Infrastructure Ontario rates for 15 year money is 3.2%.



As illustrated in table 4, a change in 15 year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

Normally we outline how Niagara Falls has historically used debt for investing in the asset categories as listed. However, there is currently \$0 of debt outstanding for the assets covered by this AMP. In terms of overall debt capacity, Niagara Falls currently has \$62,477,000 of total outstanding debt and \$7,589,000 of total annual principal and interest payment commitments. These principal and interest payments are well within its provincially prescribed annual maximum of \$28,217,000.

The revenue options outlined in this plan allow Niagara Falls to fully fund its long-term general capital requirements without further use of debt. However, as explained in section 7.3.2, the recommended condition rating analysis may require otherwise.

## 7.5 Use of reserves

### 7.5.1 Available reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for planning include:

- the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- financing one-time or short-term investments
- accumulating the funding for significant future investments
- managing the use of debt
- normalizing funding requirements

By asset category, table 5 outlines the details of the reserves currently available to Niagara Falls.

Asset Category	Balance at December 31, 2014
Facilities	0
Land Improvements	0
Vehicles	0
Machinery, Equipment & Furniture	0
<b>Total Tax Funded</b>	<b>0</b>

There is considerable debate in the municipal sector as to the appropriate level of reserves that a City should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account when determining their capital reserve requirements include:

- breadth of services provided
- age and condition of the assets
- use and level of debt
- economic conditions and outlook
- internal reserve and debt policies.

As outlined in table 5, there are no reserves available for use by applicable asset categories during the phase-in period to full funding. However, Niagara Falls' judicious use of debt in the past will allow the scenarios to assume that, if required, available debt capacity can be used for high priority and emergency infrastructure and general capital investments in the short to medium-term.

### **7.5.2 Recommendation**

As Niagara Falls updates its AMP and expands it to include other asset categories, we recommend that future planning should include determining what its long-term reserve balance requirements are and a plan to achieve such balances.

# 8.0 Appendix A: Report Card Calculations

## Key Calculations

1. "Weighted, unadjusted star rating":

*(% of assets in given condition) x (potential star rating)*

2. "Adjusted star rating"

*(weighted, unadjusted star rating) x (% of total replacement value)*

3. "Overall Rating"

*(Condition vs. Performance star rating) + (Funding vs. Need star rating)*

---

2

Grade Cutoffs		
1. Conditions vs Performance		
Letter Grade	Star Rating	
F	0	
D	2	
D+	2.5	
C	2.9	
C+	3.5	
B	3.9	
B+	4.5	
A	4.9	
A	5	
2. Funding vs Need		
Funding %	Star rating	Grade
0.0%	0	F
25.0%	1	F
46.0%	1.9	D
61.0%	2.9	C
76.0%	3.9	B
91.0%	4.9	A
100.0%	5	A

**Facilities**

Niagara Falls

**1. Condition vs. Performance**

Total category replacement value		<b>\$231,792,147</b>		Segment replacement value	<b>\$231,792,147</b>	Segment value as a % of total category replacement value	<b>100.0%</b>
Segment	Condition	Letter grade	Star rating	Quantity (\$) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Facilities	Excellent	A	5	134,231,281	58%	2.90	<b>3.7</b>
	Good	B	4	8,043,007	3%	0.14	
	Fair	C	3	3,229,155	1%	0.04	
	Poor	D	2	48,033,751	21%	0.41	
	Critical	F	1	38,003,214	16%	0.16	
			<b>Totals</b>	<b>231,540,407</b>	<b>100%</b>	<b>3.66</b>	

Category star rating	Category letter grade
<b>3.7</b>	<b>C+</b>

**2. Funding vs. Need**

Average annual investment required	2014 funding available	Funding percentage	Deficit	Category star rating	Category letter grade
\$5,278,000	\$400,000	7.6%	\$4,878,000	<b>0.0</b>	<b>F</b>

**3. Overall Rating**

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.7	0.0	1.8	<b>F</b>



**Land Improvements** Niagara Falls

**1. Condition vs. Performance**

Total category replacement value				<b>\$23,777,272</b>	Segment replacement value	<b>\$23,777,272</b>	Segment value as a % of total category replacement value	<b>100.0%</b>
Segment	Condition	Letter grade	Star rating	Quantity (\$) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating	
Land Improvements	Excellent	A	5	9,089,013	41%	2.03	<b>3.0</b>	
	Good	B	4	1,562,951	7%	0.28		
	Fair	C	3	1,690,006	8%	0.23		
	Poor	D	2	698,656	3%	0.06		
	Critical	F	1	9,316,440	42%	0.42		
			<b>Totals</b>	<b>22,357,066</b>	<b>100%</b>	<b>3.02</b>		

Category star rating	Category letter grade
<b>3.0</b>	<b>C</b>

**2. Funding vs. Need**

Average annual investment required	2014 funding available	Funding percentage	Deficit	Category star rating	Category letter grade
\$1,023,000	\$250,000	24.4%	\$773,000	<b>0.0</b>	<b>F</b>

**3. Overall Rating**

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.0	0.0	1.5	<b>F</b>

**Machinery, Equipment & Furniture**

Niagara Falls

**1. Condition vs. Performance**

Total category replacement value		<b>\$16,749,870</b>		Segment replacement value		<b>\$16,749,870</b>		Segment value as a % of total category replacement value		<b>100.0%</b>	
Segment	Condition	Letter grade	Star rating	Quantity (\$) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating				
Machinery, Equipment & Furniture	Excellent	A	5	9,125,382	54%	2.72	<b>4.2</b>				
	Good	B	4	4,451,866	27%	1.06					
	Fair	C	3	586,635	4%	0.11					
	Poor	D	2	2,187,126	13%	0.26					
	Critical	F	1	398,862	2%	0.02					
			<b>Totals</b>	<b>16,749,871</b>	<b>100%</b>	<b>4.18</b>					

							Category star rating	Category letter grade
							<b>4.2</b>	<b>B</b>

**2. Funding vs. Need**

Average annual investment required	2014 Funding Available	Funding percentage	Deficit				Category star rating	Category letter grade
\$2,107,000	\$335,000	15.9%	\$1,772,000				<b>0.0</b>	<b>F</b>

**3. Overall Rating**

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
4.2	0.0	2.1	<b>D</b>

**Vehicles**

Niagara Falls

**1. Condition vs. Performance**

Total category replacement value		<b>\$60,519,663</b>		Segment replacement value		<b>\$60,519,663</b>		Segment value as a % of total category replacement value		<b>100.0%</b>	
Segment	Condition	Letter grade	Star rating	Quantity (\$) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating				
Vehicles	Excellent	A	5	23,206,511	38%	1.92	<b>3.2</b>				
	Good	B	4	4,047,530	7%	0.27					
	Fair	C	3	9,381,307	16%	0.47					
	Poor	D	2	7,401,279	12%	0.24					
	Critical	F	1	16,483,034	27%	0.27					
			<b>Totals</b>	<b>60,519,661</b>	<b>100%</b>	<b>3.17</b>					

Category star rating	Category letter grade
<b>3.2</b>	<b>C</b>

**2. Funding vs. Need**

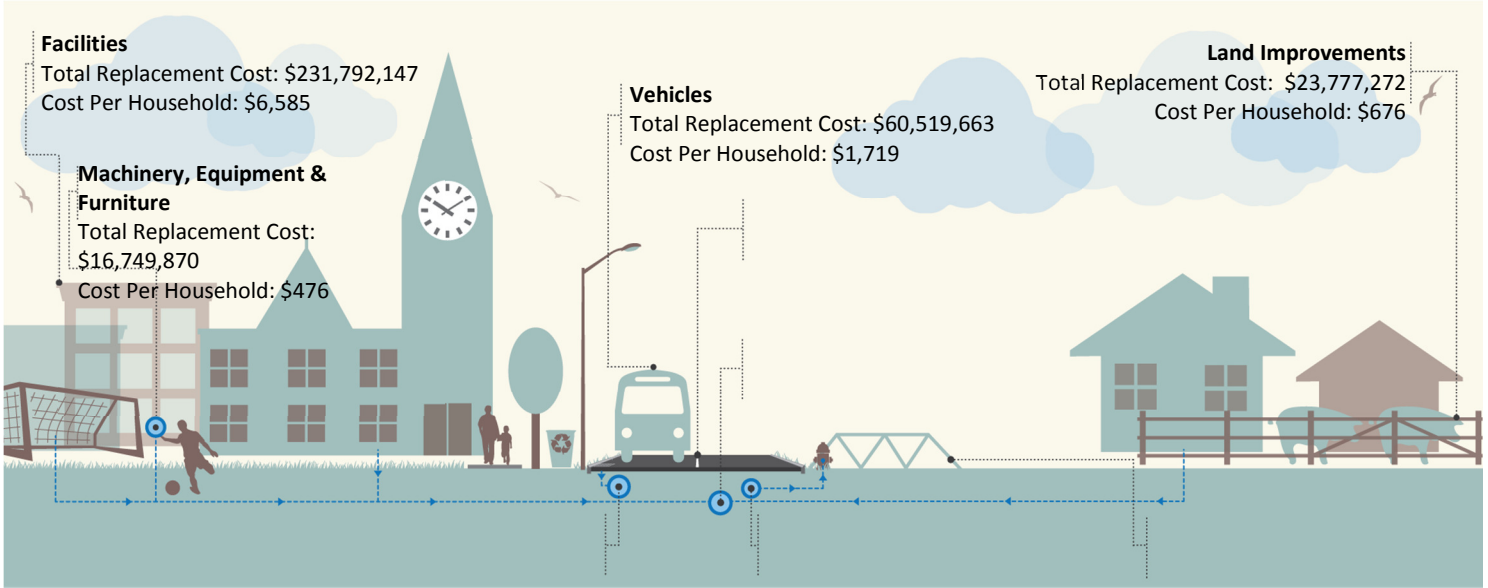
Average annual investment required	2014 Funding Available	Funding percentage	Deficit			Category star rating	Category letter grade
\$5,528,000	\$1,650,000	29.8%	\$3,878,000			<b>1.0</b>	<b>F</b>

**3. Overall Rating**

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.2	1.0	<b>2.1</b>	<b>D</b>

### General Capital Replacement Cost Per Household

Total: \$9,456 per household



### Daily Investment Required Per Household for General Capital Sustainability

