

# Corporate Facilities and Energy Management Asset Management Plan 2024



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

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## SUMMARY AND QUICK FACTS

### SERVICE PROFILE



The Corporate Facilities and Energy Management (CFEM) division aims to ensure the City of Hamilton’s facilities are operating effectively and efficiently. Delivering this service is vital, as it aids every division in reaching their respective levels of service.

### ASSET SUMMARY



**Replacement Value**  
**\$912.7M**  
**GOOD CONDITION**  
Average Age of **39** years  
or 18% of the average  
remaining service life

### LEVEL OF SERVICE SUMMARY

- The majority of survey respondents felt that the City has an *average performance* keeping facilities clean and in good repair.



ASSET HIGHLIGHTS				
ASSETS	QUANTITY	REPLACEMENT COST	AVERAGE CONDITION	STEWARDSHIP MEASURES
FACILITIES	10	\$907M	Good	Building Condition Assessments
FLEET	27	\$1.3M	Poor	Regular Inspections

### DATA CONFIDENCE



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## DEMAND DRIVERS



**Population Change** – Hamilton’s population is growing, necessitating the expansion of facilities citywide to accommodate this increase. Consequently, there will be a need for additional personnel to effectively oversee these expansions and manage the growing facility demands.



**Climate Change** - CFEM is focused on ensuring that its facilities transition to meet the City of Hamilton’s climate change goals with a focus on enhancing operational resiliency and decreasing its carbon footprint. These climate change goals set forth by the Pathway to NetZero are planned to be met by 2050.

## RISK



Critical Assets were identified at the facility level, which impacts the overall function of the City. These include:

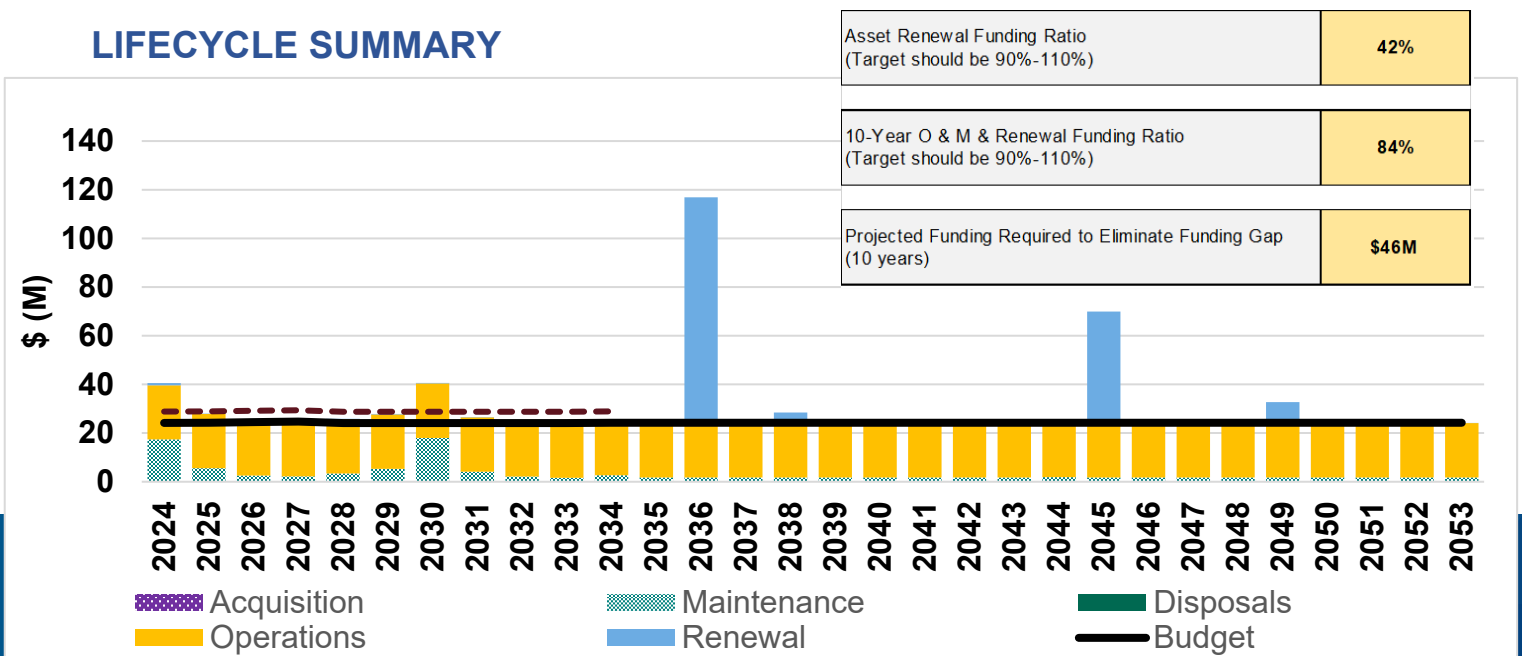
- Wentworth Street Operations Centre
- Stoney Creek City Hall
- Provincial Offences Administration
- Lister Block
- Hamilton City Hall

## CLIMATE CHANGE MITIGATION



- Net Zero facility design projects have been adopted into major renovation new construction projects at the Macassa Lodge and proposed Waterdown Police and Fire Station.
- Enhancing operational resiliency through energy efficient equipment retrofit, low carbon fuel transition and other assessments is included in feasibility studies and assessment as a regular practice.

## LIFECYCLE SUMMARY



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 1. INTRODUCTION

Corporate Facilities and Energy Management (CFEM) provides facility services to various internal City divisions which includes supporting the operations and maintenance functions of a diverse portfolio of 500+ city facilities as well as ensuring the efficient management of their energy usage. In addition, CFEM supports the operation and maintenance of Tim Hortons Field which is an entertainment sports facility that is the home stadium for the Hamilton Tiger-Cats professional Canadian football team and Forge FC Canadian professional soccer club.

The purpose of this Asset Management Plan (AM Plan) is to ensure that CFEM has the required assets to deliver its services. It also aims to communicate the requirements for the sustainable delivery of these services through the management of assets, compliance with regulatory requirements (i.e. O. Reg 588/17)<sup>1</sup>, and required adequate funding to provide an acceptable state of good repair with appropriate levels of service over the 2024-2053 planning period.

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<sup>1</sup> Government of Ontario, 2017



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 2. BACKGROUND

The information in this section is intended to provide background on the CFEM services by providing a service profile, outlining legislative requirements, and defining the asset hierarchy used throughout the report. This section will provide the necessary background for the remainder of the AM Plan. While CFEM is responsible for providing facility management services for many facilities owned across the City, the facilities listed below are identified as ones CFEM has primary oversight over. The scope of this plan includes both the Facilities with the primary owner and responsibility by CFEM and the resources and assets required for the overall facility management services they provide across the city.

**Table 1: Facilities with Primary Responsibility by CFEM**

ADMINISTRATIVE FACILITIES	YARD / MAINTENANCE FACILITIES	TIM HORTONS FIELD
<ul style="list-style-type: none"> <li>• Hamilton City Hall</li> <li>• Hamilton City Hall Garage</li> <li>• Lister Block</li> <li>• Dundas Town Hall</li> <li>• Stoney Creek City Hall</li> <li>• Glanbrook Town Hall</li> <li>• Provincial Offences Administration</li> </ul>	<ul style="list-style-type: none"> <li>• Central Services Workshops (Barton Yard)</li> <li>• Wentworth Street Operations Centre</li> </ul>	<ul style="list-style-type: none"> <li>• Tim Hortons Field</li> </ul>

### 2.1 SERVICE PROFILE

Listed below are related documents reviewed in preparation for the Asset Management Plan:

- **Asset Management Plan Overview Document**;
- Corporate Energy and Sustainability Policy; and,
- Pathway to Net Zero for Corporate Buildings.

Additional financial-related documents are identified in **Section 10** Plan Improvement and Monitoring.

#### 2.1.1 SERVICE HISTORY

The CFEM division operates within the Public Works Department. A reorganization of the Public Works structure in 2017 led to the establishment of the Energy, Fleet and Facilities Management Division. Subsequently, a minor reorganization in 2022 resulted in the removal of the Fleet Section, with the division now focusing solely on facility assets under the name Corporate Facilities and Energy Management (CFEM) Division.

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CFEM oversees a diverse portfolio of more than 500 facilities across multiple divisions of the city, with a total value exceeding \$4 billion as of 2023. While CFEM is a service provider to these city-owned facilities, for the purposes of this AM Plan, only the assets that CFEM needs in order to provide its services are contained in this Plan. All other facilities are contained in their respective AM Plans. Within CFEM, the Office of Energy Initiatives was founded in 2006 to monitor the City's energy usage, costs, energy and Greenhouse Gas (GHG) intensity, and data reporting, and to facilitate, lead and support energy efficiency projects. The City of Hamilton became the first municipality in Ontario to gain acceptance from the Ontario Energy Financial Corporation for the construction of a sustainable renewable energy generator, achieved through the development of a biogas cogeneration plant in 2006.

Other established components within the division include the Operations and Maintenance group, the Strategic Planning, Capital Construction and Compliance group, and the Facilities Planning and Business Solutions group. Most recently, a distinct section within the division, Corporate Security, was established in 2024, having previously been integrated under the Facilities Planning and Business Solutions umbrella. Additionally, Tim Horton's Field, the multi-purpose stadium, commenced operations in September 2014.

## 2.1.2 SERVICE FUNCTION

CFEM's primary responsibilities revolve around operations and maintenance by preserving, improving, and guaranteeing the efficient functioning of a variety of city-owned and leased facilities. They offer a wide range of services for the City's entire facility asset portfolio, while also serving as asset owners for their own facilities. The subsequent service functions detailed below showcase the group's capabilities as they apply on a city-wide scale. These sections operate under the CFEM umbrella, delineating the varied roles and functions of the division, all of which contribute to the city's overall welfare and functionality:

- **Operations and Maintenance**
  - Maintenance and Repair Facilities
  - Work Requests
  - Building Security
  - Contract Management
  - Project Coordination
- **Planning, Capital Construction and Compliance**
  - Capital Planning
  - Facility Condition Assessments
  - Renovations (Major and Minor)
  - Refurbishing
  - Office Relocations
  - New Furniture Requests
  - Accessibility Reviews
  - Project Management Services
  - Capital Projects (Large and Small)
  - Compliance Programs

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- **Facilities Planning and Business Solutions**
  - Facilities Planning
  - Facilities Service Centre
  - Leased Facility Management
  - Technical Services includes space planning.
  - Property and tenant Management
- **Corporate Security**
  - Security Planning Services
  - Incident Management and Reporting
  - Public Engagement and special initiatives support.
- **Tim Horton's Field**
  - Home stadium to Hamilton Tiger-Cats and Forge FC sports clubs
  - Events venue
  - Community rental space
- **Energy Management**
  - Utilities
    - Energy data reporting
    - Utility billing
    - Commodity procurement
  - Energy Engineering
    - Energy efficiency project delivery and support
    - Energy management benchmarking and planning
    - Incentive applications
    - Net Zero and renewable energy
    - Demand Management

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## 2.1.3 USERS OF THE SERVICE

### 2.1.3.1 CORPORATE SUPPORT (INTERNAL USERS)

Users of the service include internal staff working within the City's facilities such as corporate employees, Hamilton Fire Department (HFD), Hamilton Public Library (HPL), Recreation, Hamilton Police Service (HPS), and Long-Term Care (LTC) clients. Staff members can submit requests to access services offered by the CFEM team. Similarly, internal staff operating City-owned facilities are the primary users of energy management services, collaborating on energy efficiency and Greenhouse Gas (GHG) reduction projects and utility procurement and usage monitoring.

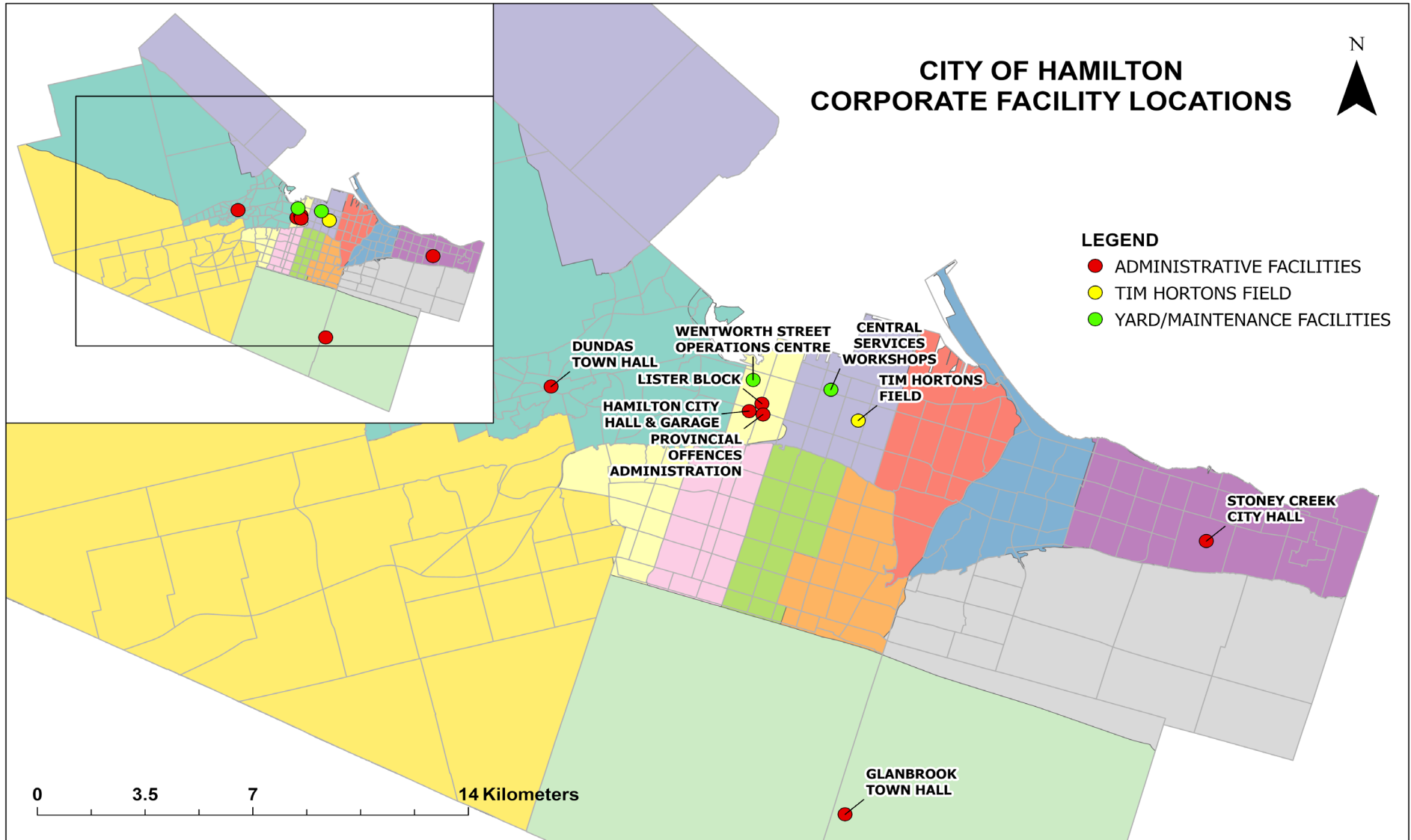
### 2.1.3.2 COMMUNITY FACILITIES (EXTERNAL USERS)

Users of these services also include the public, who benefit from the maintenance and operations of community facilities provided by the CFEM team. In this regard, physical assets serve as the resources provided to these service users and their experience visiting these facilities. Additionally, these users consist of both the attendees of events at Tim Horton's Field, and the sports organizations in long-term contracts with the facility.

Presented in **Figure 1** is a map of facilities with primary responsibility by CFEM. This list of facilities is included in **Table 1**, consisting of assets for use by both internal and external users.

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Figure 1: Facilities with Primary Responsibility by CFEM



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## 2.1.4 UNIQUE SERVICE CHALLENGES

CFEM has some unique service challenges which will be discussed throughout this report:

- The primary service challenge facing CFEM stems from financial limitations from annual operations and maintenance budget allocation. With escalating facility-related expenses, the significant challenge lies in the insufficient budget allocation necessary to effectively manage the workload and costs required to ensure facilities are in a good state of repair and in adequate working order. Due to this, many asset lifespans have had to be extended beyond their expected service life, increasing emergency failure rates and downtime in operations. This has resulted in shut shutdown of recreational facilities impacting public programs and other services provided by these facilities which is further discussed in the Recreation AM Plan. Balancing the infrastructure needs with the programming needs continues to be a priority for CFEM. By incorporating all deferred work at a facility whenever another project objective arises, the operating impacts and closures of facilities can be minimized.
- Internal staff capacity issues have been noted specific to vendor management. CFEM currently manages over 120 vendors with contracts responsible for a variety of facility operations, which they are underequipped to manage with their current staffing capacity. Technical Standards and Safety Authority (TSSA) inspections and other regulatory bodies assist in identifying gaps in service delivery of contracts at CFEM facilities. CFEM staff-to-facility ratio is much lower than similarly sized municipalities which has impacted adequate and routine quality control of service providers across the portfolio. Additionally, there have been noted shortages in the number of internal skilled trade staff, as well as shortcomings in emergency response protocols. As this first version of the AM plan is limited to current levels of service, it does not address the optimization of resources needed to achieve the desired level of service. This has been noted as a continuous improvement item in **Section 10.2**.
- Implementing the integration of Internet of Things (IoT) devices into existing facility equipment inventory has been noted as a challenge. These devices impose additional operational workloads on staff that were previously non-existent, necessitating further training to implement.
- Given the energy intensity and Greenhouse Gas (GHG) emission reduction targets established in the Corporate Energy and Sustainability Policy (CESP), the predominant service challenge for the energy management team is the implementation of necessary projects to reach the goals established. In part of this challenge, there are additional barriers to reaching the outlined goals as the Office of Energy Initiatives (OEI) has no direct control of facility users (e.g., optimized operations through HVAC post-implementation). The effective operation of the upgraded systems is dictated by user

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behaviors which may require additional education to ensure impactful energy use reductions are realized. Additionally, incremental funding above and beyond the life cycle renewal funding is a key challenge to bring facilities to Net Zero-ready condition.

- Alongside financial restraints, a major obstacle in climate adaptation lies in the existing limitations in the capacity of the electrical infrastructure grid. As the installation of EV (electric vehicle) chargers and the transition from fuel-burning to electrified equipment in facilities demand greater power, situations may arise where the current electrical grid lacks sufficient capacity for these systems to be feasibly implemented. Moreover, the City of Hamilton is unable to directly address this limitation as the electrical grid is owned and operated by a separate entity.
- Service challenges for the operation of Tim Hortons Field revolve around meeting contractual obligations with sports organizations and commitments to maintaining the asset as a first-class facility. With limitations in funding, the possibility of breaching contracts poses a risk of litigation and subsequent reputational and financial costs.
- Delivering new construction projects with long lead times requires larger and strengthened collaboration with other City departments and divisions, followed by adequate resourcing of both staff and finances to deliver these capital projects. Alternate delivery and integrated project delivery models are to be explored to enable the effective execution of these projects to keep up with new facility needs at pace with growth.

## 2.2 LEGISLATIVE REQUIREMENTS

The most significant legislative requirements that impact the delivery of the respective asset group's services are outlined in **Table 2**. These requirements are considered throughout the report, and where relevant, are included in the levels of service measurements.

**Table 2: Legislative Requirements**

LEGISLATION OR REGULATION	REQUIREMENT
O. Reg. 332/12: Building Code	Requirements for the construction of new and alterations of existing facilities. Additionally, the building code outlines energy efficiency requirements for buildings.
O. Reg. 191/11: Integrated Accessibility Standards	Accessibility requirements for facility construction and renovations.
O. Reg. 278/05: Designated Substance	Requirements for the management of asbestos on construction projects in buildings and repair operations.

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LEGISLATION OR REGULATION	REQUIREMENT
COH By-Law 10-103	A by-law respecting the prevention of backflow into the water distribution system of the City of Hamilton.
TSSA (Technical Standards and Safety Authority)	Ontario's public safety regulations for Elevating and Amusement Devices, Ski Lifts, Fuels, Boilers and Pressure Vessels, and Operating Engineers.
COH By-Law 11-078	A by-law respecting the control of Legionella bacteria in cooling towers.
O. Reg. 213/07: Fire Code	As related to the Ontario Building Code, specific regulations aimed at limiting the probability of fire in facilities.
ESA (Electrical Safety Authority)	Electrical safety standards and requirements for facilities.
OSHA (Occupational Safety and Health Act)	Health and safety standards ensure safe and healthful working conditions for workers.
R.R.O. 1990, Regulation 565	Regulations aimed to prevent or reduce the risks of water-borne disease or injury and promote healthy recreational water use.
Procurement Policy By-law 21-255	A by-law respecting the procurement policy for the City of Hamilton.
Ontario Heritage Act, R.S.O. 1990, c. O.18	Guidelines related to the preservation of properties deemed culturally significant.
O. Reg 25/23 Broader Public Sector (BPS): Energy Reporting and Conservation Demand Management Plans	Made under the Electricity Act, of 1998, BPS organizations are required to report annually to the Ministry of Energy and update their plans every five years.

## 2.3 ASSET HIERARCHY

In order to deliver services, CFEM requires assets. The CFEM service areas have been broken down into **four** asset classes for the purpose of this AM Plan which are shown in **Table 3**:



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- **Facilities:** refers to City-owned facilities that CFEM provides primary oversight on and that they are required to deliver their widespread facility services.
- **Fleet:** refers to vehicles which are used for CFEM services, as well as ones for use at Tim Horton's Field.
- **Equipment:** refers to all equipment used for CFEM service delivery including facilities maintenance equipment and Tim Horton's Field equipment such as media room and ticketing software, and kitchen and food concessions equipment.
- **IT:** describes different IT assets required to deliver the service including desktops, laptops, tablets, mobile equipment and digital solutions.

**Table 3 : Asset Class Hierarchy**

SERVICE AREA	CORPORATE FACILITIES AND ENERGY MANAGEMENT, TIM HORTONS FIELD			
ASSET CLASS	FACILITIES <sup>2 3</sup>	FLEET	EQUIPMENT	IT
<b>CFEM ASSETS</b>	<ul style="list-style-type: none"> <li>• Administrative Facilities</li> <li>• Yard/Maintenance Facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Pickup Truck</li> <li>• Van</li> <li>• Scissor lift</li> </ul>	<ul style="list-style-type: none"> <li>• Floor scrubbers</li> <li>• Snowblowers</li> <li>• Vacuum pump</li> <li>• Gas detector</li> <li>• Handheld sprayer</li> <li>• Air Compressors</li> </ul>	<ul style="list-style-type: none"> <li>• Desktop Computers</li> <li>• Laptops</li> <li>• Mobile Phones</li> <li>• Facility Mgmt. Software (e.g., ARCHIBUS, Asset Planner)</li> </ul>
<b>TIM HORTONS FIELD (THF) ASSETS</b>	Tim Hortons Field (THF) Facility	<ul style="list-style-type: none"> <li>• Tractor</li> <li>• Truck w/ Dump</li> <li>• Forklift</li> <li>• Turf Utility</li> <li>• Sidewalk Sweeper</li> <li>• Ride on Sprayer</li> </ul>	<ul style="list-style-type: none"> <li>• Point of Sale machines</li> <li>• Fridges and Freezers</li> <li>• Popcorn Machines</li> </ul>	<ul style="list-style-type: none"> <li>• Desktop Computers</li> <li>• Laptops</li> <li>• Mobile Phones</li> </ul>

<sup>2</sup> Included are the buildings listed in Section 2 – Background, which CFEM has been designated as the asset owner.

<sup>3</sup> Embedded within facility replacement costs are components such as building automation systems, servers, key scanners, etc.

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## 3. SUMMARY OF ASSETS

This section provides a detailed summary and analysis of the existing inventory information as of March 2024 including age profile, condition methodology, condition profile, asset usage, and performance for each of the asset classes.

**Table 4** displays the detailed summary of assets for the CFEM service areas. Data for these summary tables were provided by the CFEM team from the City's internal database. It is important to note that inventory information does change often and that this is a snapshot of information available as of March 2024.

The City owns approximately **\$912.7M** in CFEM assets which are on average in **Good** condition. Assets are a weighted average of **39 years** in age which is **18%** of the average remaining service life (RSL). The weighted average calculation is based on the replacement cost of the assets, therefore majority of the weighting for these averages comes from facility assets. For most assets, this means that the City should be completing preventative, preservation, and minor maintenance activities per the Building Condition Assessment (BCA) report as well as operating activities (e.g., inspection, cleaning) to prevent any premature failures.

The overall replacement value data confidence for the registry is **Medium**. Replacement values are generally based on staff expert opinion or inflated values of original purchase/replacement cost estimates. For facilities, replacement costs are calculated using an internal CFEM tool which encompasses current market rates, building type and size and were escalated to include additional soft costs. Fleet costs are typically **Medium** confidence due to challenges in maintaining current replacement value costs. IT assets replacement costs were gathered from the most recent purchase price for similar assets and are considered **High**. Equipment cost is overall **Medium** due to estimates from staff as per ongoing market rates.

The overall average age data confidence is rated as Very High as most of the highest replacement value asset classes data is based on facilities where data confidence is much higher as the date of construction or purchase is reliably known. The data confidence for the number of assets is considered Very High for facilities, fleet, and IT as these assets are well documented. Data confidence for the number of equipment assets is considered Very Low as limited asset listing was available at the time of writing.

The overall average condition data confidence is rated as High. The majority of the replacement costs are comprised of facility assets, where the condition is based on a Facility Condition Index (%FCI) which is considered to have high data confidence. For some assets, the condition is based on age and not based on actual physical inspection or data condition analysis. More details can be found in **Section 3.1**.

A continuous improvement item identified in **Section 10.2** is to ensure inventory data is accurate and includes key database fields as well as metadata and follows the newly developed City Data Standard through the creation of an Asset Registry for CFEM. Additionally, it should be noted that the City is in possession of a number of civic properties which have not been captured within

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the current iteration of this asset management planning exercise. These civic properties consist of buildings with varied uses (e.g., schools, warehouses, single-family dwellings, etc.) that are predominantly vacant. In addition to these civic properties, an exhaustive review of the City’s entire facility asset list has been noted as a continuous improvement item in **Section 10.2**, in order to better align asset ownership and responsibilities across all divisions.

Finally, the incremental cost to enhance operational resiliency and achieve Net Zero goals is not quantified at this point. Future iterations of the AM Plan seek to incorporate these costs into the lifecycle models.

Please refer to page 31 of the **AMP Overview** for a detailed description of data confidence.

The Corporate Asset Management (CAM) Office acknowledges that some works and projects are being completed on an ongoing basis and that some of the noted deficiencies may already be completed at the time of publication. In addition, the assets included below are assets that are assumed and in service at the time of writing.

**Table 4: CFEM Assets**

FACILITIES				
ASSET CATEGORY	NUMBER OF ASSETS	REPLACEMENT VALUE	AVERAGE AGE (% RSL)	AVERAGE EQUIVALENT CONDITION
Administrative Facilities	7	\$446.3M	65 years (37%)	2 - GOOD
DATA CONFIDENCE	Very High	Medium	Very High	High
Yards/Maintenance Facilities	2	\$16.1M <sup>4</sup>	73 years (0%)	3 - FAIR
DATA CONFIDENCE	Very High	Medium	Very High	High
Tim Hortons Field	1	\$442.9M	9 years (82%)	2 - GOOD
DATA CONFIDENCE	Very High	Medium	Very High	High
SUBTOTAL		\$906,931,800	67 years (30%)	2 - GOOD
DATA CONFIDENCE		Medium	Very High	High

<sup>4</sup>Partial replacement values for both facilities (Wentworth Street Operations Centre and Barton Yard) were incorporated using a ratio of the floor area occupied by CFEM respective to each building.

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FLEET				
ASSET CATEGORY	NUMBER OF ASSETS	REPLACEMENT VALUE	AVERAGE AGE (% RSL)	AVERAGE EQUIVALENT CONDITION
CFEM Fleet	13	\$0.5M	11 years (0%)	4 - POOR
DATA CONFIDENCE	High	Medium	High	Low
THF Fleet	14	\$0.8M	11 years (11%)	4 - POOR
DATA CONFIDENCE	High	Medium	High	Low
SUBTOTAL		\$1.3M	11 years (4%)	4 - POOR
DATA CONFIDENCE		Medium	High	Low

EQUIPMENT				
ASSET CATEGORY	NUMBER OF ASSETS	REPLACEMENT VALUE	AVERAGE AGE (% RSL)	AVERAGE EQUIVALENT CONDITION
CFEM Equipment	21	\$0.05M	Unknown	Unknown
DATA CONFIDENCE	Very Low	Very Low	N/A	N/A
THF Equipment	22	\$4.3M	10 years (47%)	3 - FAIR
DATA CONFIDENCE	Medium	Medium	High	Medium
SUBTOTAL		\$4.3M	10 years (47%)	3 - FAIR
DATA CONFIDENCE		Medium	High	Medium

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN


IT				
ASSET CATEGORY	NUMBER OF ASSETS	REPLACEMENT VALUE	AVERAGE AGE (% RSL)	AVERAGE EQUIVALENT CONDITION
Desktop	49	\$0.08M	4 years (19%)	4 - POOR
DATA CONFIDENCE	High	High	High	Low
Laptop	78	\$0.1M	3 years (30%)	4 - POOR
DATA CONFIDENCE	High	High	High	Low
Mobile Phone	30	\$0.01M	2 years (49%)	4 - POOR
DATA CONFIDENCE	High	High	High	Medium
Tablet	5	\$0.01M	5 years (0%)	5 - VERY POOR
DATA CONFIDENCE	High	High	High	Low
Intangible Assets (i.e., Data, Software)	Not yet quantified		N/A	N/A
DATA CONFIDENCE				
SUBTOTAL	\$0.2M		3 years (28%)	4 - POOR
DATA CONFIDENCE	High		High	Low
TOTAL	\$912.7M		39 years (18%)	2 - GOOD
DATA CONFIDENCE	Medium		High	Medium

### 3.1 ASSET CONDITION GRADING

Condition refers to the physical state of the assets and is a measure of the physical integrity of these assets or components and is the preferred measurement for planning lifecycle activities to ensure assets reach their expected useful life. Since condition scores are reported using different scales and ranges depending on the asset, **Table 5** below shows how each rating was converted to a standardized 5-point condition category so that the condition could be reported consistently across the AM Plan. A continuous improvement item identified in **Section 10.2**, is to review existing internal condition assessments and ensure they are revised to report on the same 5-point scale with equivalent descriptions.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

**Table 5: Equivalent Condition Conversion Table**



EQUIVALENT CONDITION GRADING CATEGORY	CONDITION DESCRIPTION	% REMAINING SERVICE LIFE	FACILITIES CONDITION INDEX (FCI)
<b>1 Very Good</b>	The asset is new, recently rehabilitated, or very well maintained. Preventative maintenance is required only.	>79.5%	N/A
<b>2 Good</b>	The asset is adequate and has slight defects and shows signs of some deterioration that has no significant impact on the asset's usage. Minor/preventative maintenance may be required.	69.5% – 79.4%	< 5%
<b>3 Fair</b>	The asset is sound but has minor defects. Deterioration has some impact on asset usage. Minor to significant maintenance is required.	39.5% - 69.4%	>= 5% to < 10%
<b>4 Poor</b>	The asset has significant defects and deterioration. Deterioration has an impact on asset usage. Rehabilitation or major maintenance is required in the next year.	19.5% -39.4%	>= 10% to <30%
<b>5 Very Poor</b>	The asset has serious defects and deterioration. The asset is not fit for use. Urgent rehabilitation or closure is required.	<19.4%	>= 30%

The following conversion assumptions were made:

- For assets where a condition assessment was not completed, but age information was known, the condition was based on the % of remaining service life.
- Facilities Condition Index was based on ranges provided by the consultant who completed the Building Condition Assessment (BCA).

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2 ASSET CLASS PROFILE ANALYSIS

This section outlines the Age Profile, Condition Methodology, Condition Profile, and Performance Issues for each of the asset classes.

- The age of an asset is an important consideration in the asset management process as it can be used for planning purposes as typically assets have an estimated service life (ESL) where they can be planned for replacement. Some lower-cost or lower criticality assets can be planned for renewal based on age as a proxy for condition or until other condition methodologies are established. It should be noted that if an asset's condition is based on age, it is typically considered to be of a low confidence level. Although typically, age is used when projecting replacements beyond the 10-year forecast to predict degradation.
- Condition refers to the physical state of assets and is a measure of the physical integrity of assets or components and is the preferred measurement for planning lifecycle activities to ensure assets reach their expected useful life. Assets are inspected/assessed at different frequencies and using different methodologies to determine their condition which are noted in this section.
- Finally, there are often insufficient resources to address all known asset deficiencies, and so performance issues may arise which must be noted and prioritized.

### 3.2.1 FACILITIES PROFILE

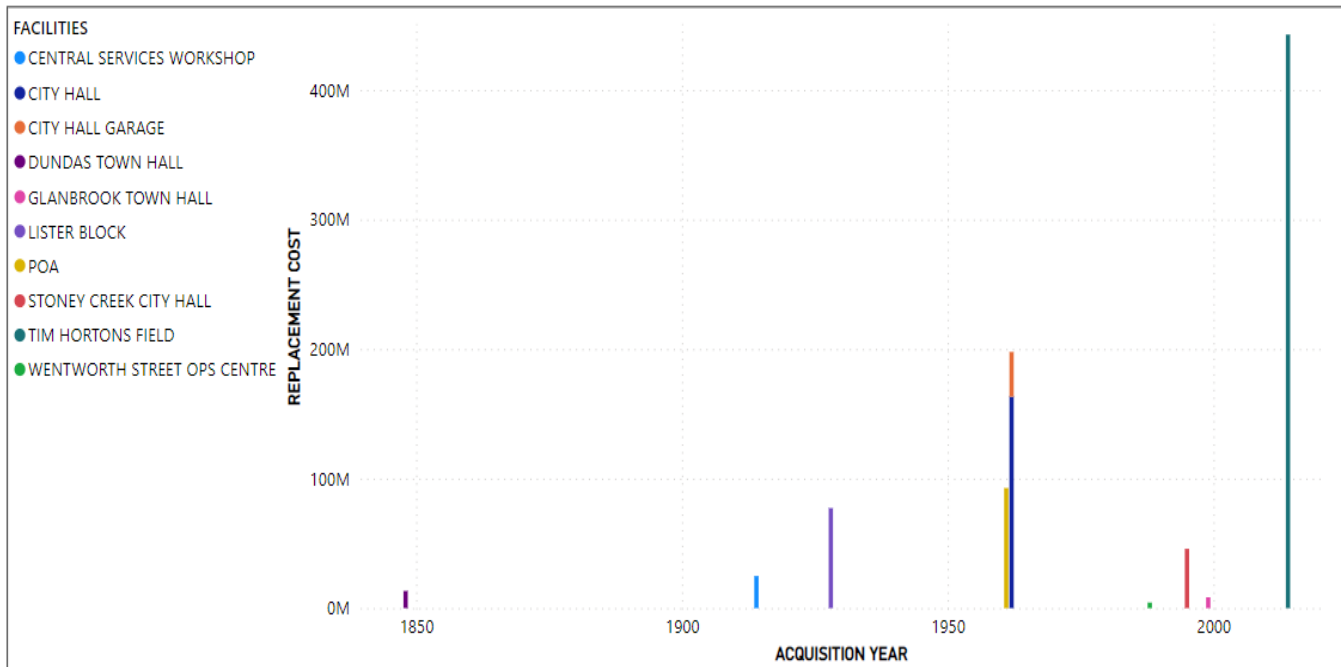
#### 3.2.1.1 AGE PROFILE

The age profile of CFEM Facilities assets is shown in **Figure 2**, displaying both the replacement cost and year of construction (i.e., acquisition year). For facility assets, the data confidence for age is typically Very High because this information was recorded during construction. The oldest facility in scope is the Dundas Town Hall, built in 1848, while the most recent addition is Tim Horton's Field, which was completed in 2014. Established by CFEM, the Estimated Service Life (ESL) of facilities is typically set for 50 or 75 years. While these values do provide estimates for the lifespan of a typical structure, all facilities do not require full replacements at the end of their ESL, as major improvements can extend these anticipated lifespans. These timeframes do prove useful as a flag to review the outlook of facilities as they approach the end of their ESL. Given the current ESL values provided, the Provincial Offences Administrative and Stoney Creek City Hall buildings will reach the end of their anticipated lifespans in 2036 and 2045, respectively.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

For facilities with a heritage designation, the Expected Service Life (ESL) is extended indefinitely to preserve its cultural significance. Additional investigation is needed to determine a more consistent framework for calibrating the ESLs of both standard and heritage buildings, which has been noted as a continuous improvement item in **Section 10.2**. Within CFEM’s portfolio of buildings, Hamilton City Hall, Hamilton City Hall Garage, Lister Block, and Dundas Town Hall have been designated as heritage buildings.

**Figure 2: Facilities Age Profile**



### 3.2.1.2 CONDITION METHODOLOGY AND PROFILE

The condition for CFEM facilities is determined based on the results of a Building Condition Assessment (BCA). BCAs are typically completed on these facilities on a five-year cycle and output a score called a Facility Condition Index (FCI). The FCI is a financial indicator of condition and is calculated based on a ratio of the cost of work required on the facility to the total replacement cost of the facility. It is important to acknowledge that this FCI value calculation also incorporates costs identified for exterior site elements (e.g., parking lots, fences, etc.) that are not indicative of the condition of the facility itself. This has been identified as a continuous improvement item in Section 10. The condition conversion from FCI to the standardized 5-point scale used in this AM Plan is shown in **Table 6**.



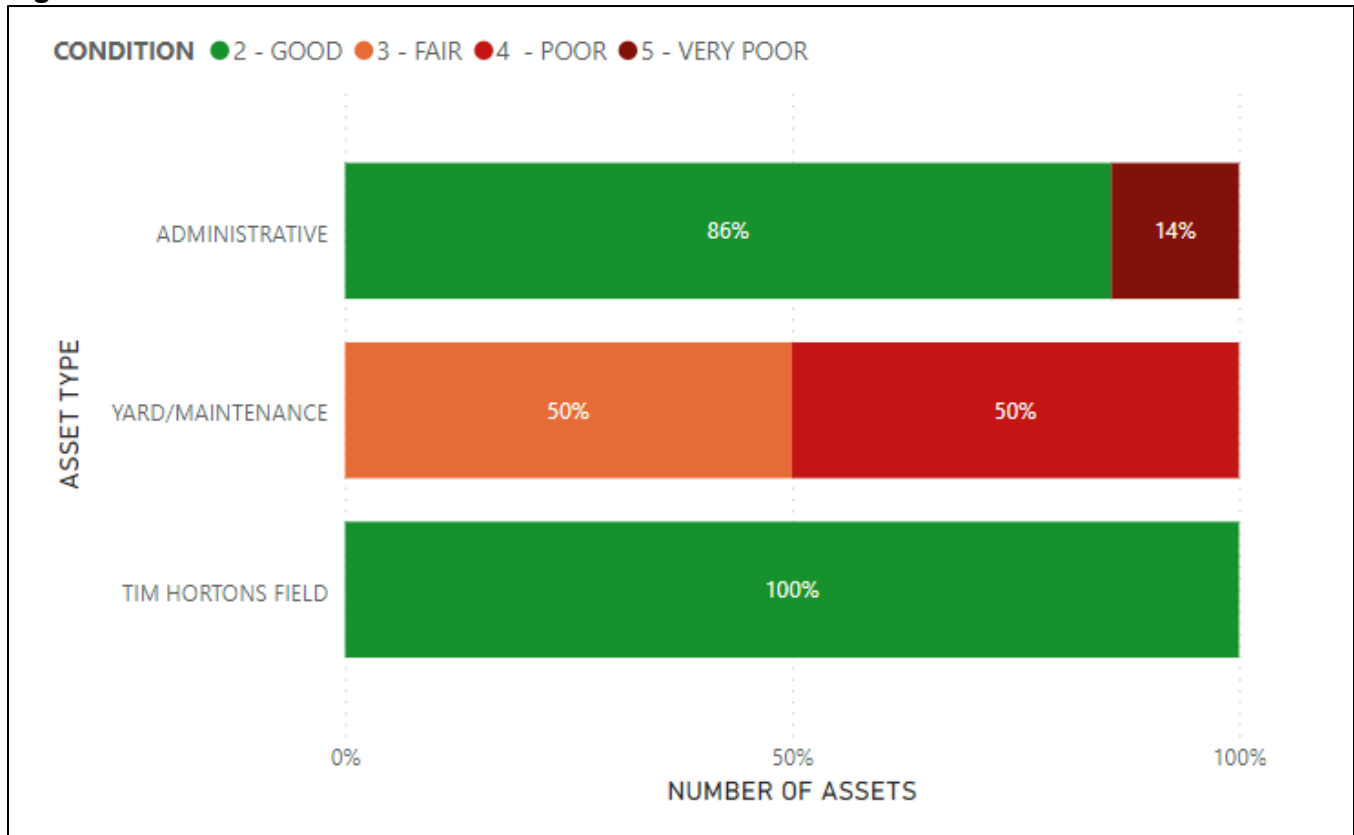
# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

**Table 6: Inspection and Condition Information**

ASSET	INSPECTION FREQUENCY	LAST INSPECTION	CONDITION SCORE OUTPUT
Facilities	Every 5 years	Varied	Facility Condition Index (0% - 100%)

The weighted average by replacement cost for all facilities is GOOD condition. The Yard/Maintenance facilities were noted to be in poorer condition overall when compared to the administrative facilities. Major capital work projects are included in **Table 7**.

**Figure 3: Facilities Asset Condition Distribution**



Included within the Administrative facilities asset category, Dundas Town Hall’s current condition score is rated “5 – VERY POOR”. This low condition score is primarily driven by the high-cost work identified in the foundation, as indicated by the BCA report completed in 2019.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.1.3 ASSET USAGE AND PERFORMANCE

Facility performance deficiencies have been separated into two tables, consisting of notable deficiencies specific to CFEM facilities and common performance deficiencies observed in facilities City-Wide, as seen in **Table 7** and **Table 8**, respectively.

**Table 7** below comprises the deficiencies with the highest costs. These suggested actions stem from inspections conducted by third-party consultants and documented in BCA reports.

**Table 7: Known Service Performance Deficiencies (CFEM Facilities)**

ASSET	LOCATION	SERVICE DEFICIENCY	DESCRIPTION OF DEFICIENCY
FACILITY	Tim Horton's Field	Scoreboard	End-of-life replacement
		Turf Play Field – Artificial Grass	End-of-life replacement
		Interior Lighting	LED retrofit to the entire building
		Play Field Lighting	Lifecycle Replacement for 'out-of-warranty' stadium lighting fixtures
	Central Services Workshop	Exterior Windows	End-of-life replacement
		Parking Lots - Asphalt	Areas with cracking and spots for potential ponding
	Wentworth Street Operations Centre	Built-Up Roof	Visible areas of ponding
		Sealed Concrete Floor	Visible cracks and damage
		Asphalt Paving	Visible cracking and areas of ponding
		Footings and Foundations	Visible deterioration on the poured concrete walls
		Electrical Service Equipment	End-of-life replacement
	Dundas Town Hall	Footings and Foundations	Visible signs of cracking.
	City Hall	Carpeting	End-of-life replacement
		Bitumen Roofing	Visible pooling and vegetation growth, end-of-life replacement
		Parking Lot	Asphalt and concrete curbs – visible cracking, end-of-life replacement

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Generally, CFEM facilities are functioning at an acceptable level. Of note, Tim Horton's Field is expected to replace multiple systems as part of its fulfillment of contractual obligations.

In addition, the capital works team has identified the common deficiencies and capital programs in **Table 8** below. Consequently, specific funding blocks have been established to allocate annual budgets for remedying these common, high-cost deficiencies in facilities across the city.

**Table 8: Funding Categories for Typical Performance Deficiencies (City-Wide)**

ASSET	PROGRAM	DESCRIPTION
FACILITY (CITY-WIDE)	Roof Management	Replacement of roof coverings to preserve the integrity of the building structure and foundation
	Parking Lot Management	Resurfacing/replacement of parking lots with inclusion of Electric Vehicle chargers and solar power.
	Diesel Generator Upgrades	Low carbon fuel implementation via upgrades to diesel generators and transition to clean fuels
	Recreation Centre Retrofits	Standard retrofit projects specific to recreation facilities, and include energy and Greenhouse Gas mitigation features
	Mechanical Infrastructure Lifecycle Renewal	Replacement of mechanical equipment (e.g., HVAC units) with more energy and greenhouse-gas-efficient options that result in increased operational resiliency

The above programs provide annual reserves of funding to be allocated for specific projects on individual buildings. While this approach offers flexibility in applying yearly capital disbursements, it lacks a secure funding outlook for anticipated projects. The allocation of capital to specific projects occurs reactively on a yearly basis, with resources prioritized to complete projects of the highest urgency. This reactive approach is necessitated by factors such as general underfunding, variability in quoted project costs, scheduling conflicts, new issues or failures in facilities, and insufficient or underleveraged data. This funding allocation model needs to be reviewed to reflect the status of asset conditions and the annual increase must align with market inflation around material and construction costs.

Consequently, this method has hindered the accuracy of lifecycle modelling, as capital budgets cannot be specifically allocated to individual buildings. Adopting a more proactive strategy to forecast expected major works for assets managed by CFEM would result in a more cost-effective approach to asset management. This approach is well accepted as best practice in the industry and would minimize reactive maintenance costs, identify opportunities to bid on multiple projects simultaneously, reduce closures, and afford divisions more time to plan their schedules around shutdowns. The creation of a healthy reserve fund across the facility portfolio to address

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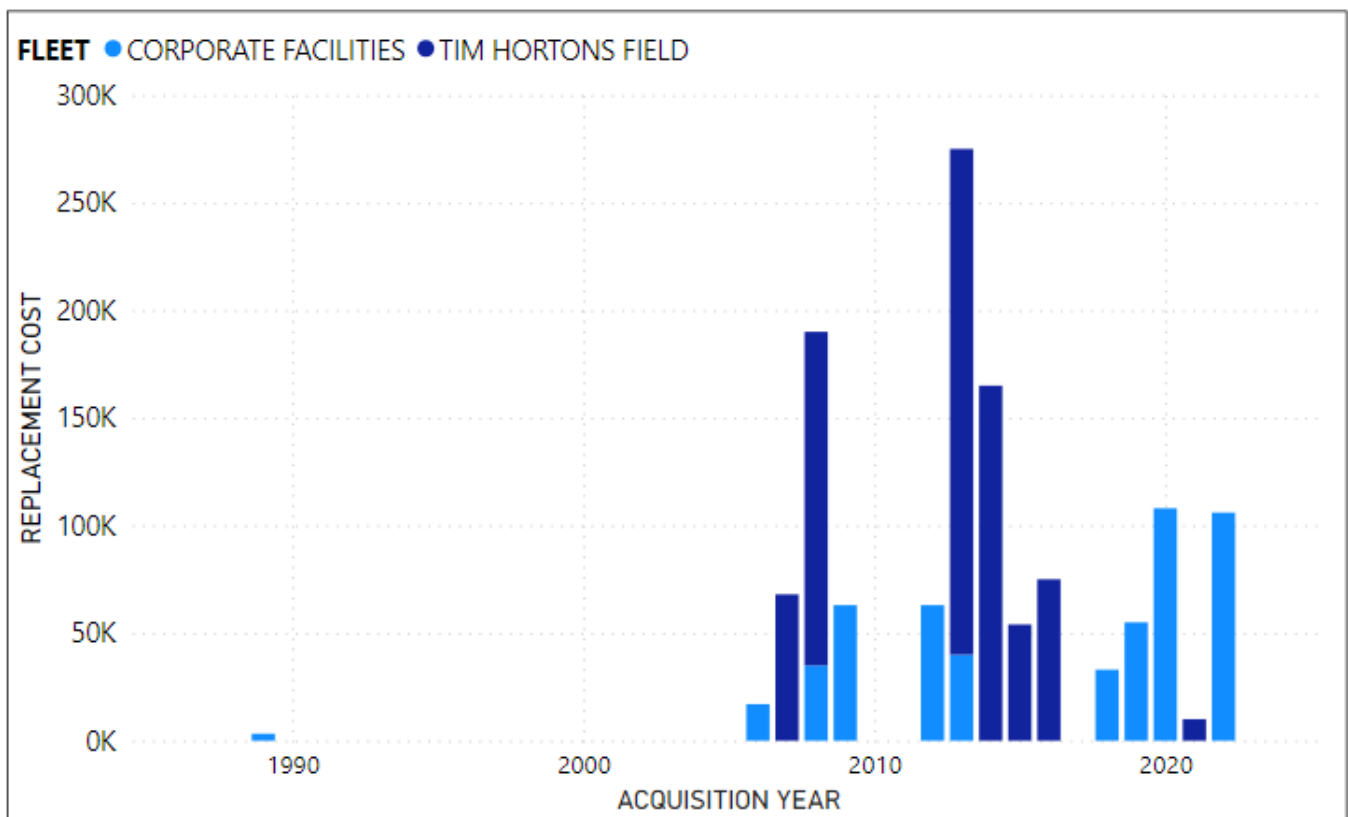
emergency breakdown and equipment replacement needs is essential to bring the facility back into operation with minimal impact on public programs. Continuing to drive this proactive strategy has been included as a continuous improvement item in **Section 10.2**.

## 3.2.2 FLEET PROFILE

### 3.2.2.1 AGE PROFILE

The age profile for Fleet assets is shown in **Figure 4**. Data confidence for the age of Fleet assets is typically High because asset age is formally recorded, and vehicle models typically include the year of manufacture. An analysis of the age profile is provided below.

**Figure 4: Fleet Age Profile**



Most of the CFEM vehicles were acquired from 2005 to 2022. Since the Estimated Service Life (ESL) for vehicles is an average of 11.3 years, any vehicles purchased before 2012 are beyond their service life and will appear in the Renewal backlog in **Section 8.3**.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.2.2 CONDITION METHODOLOGY AND PROFILE

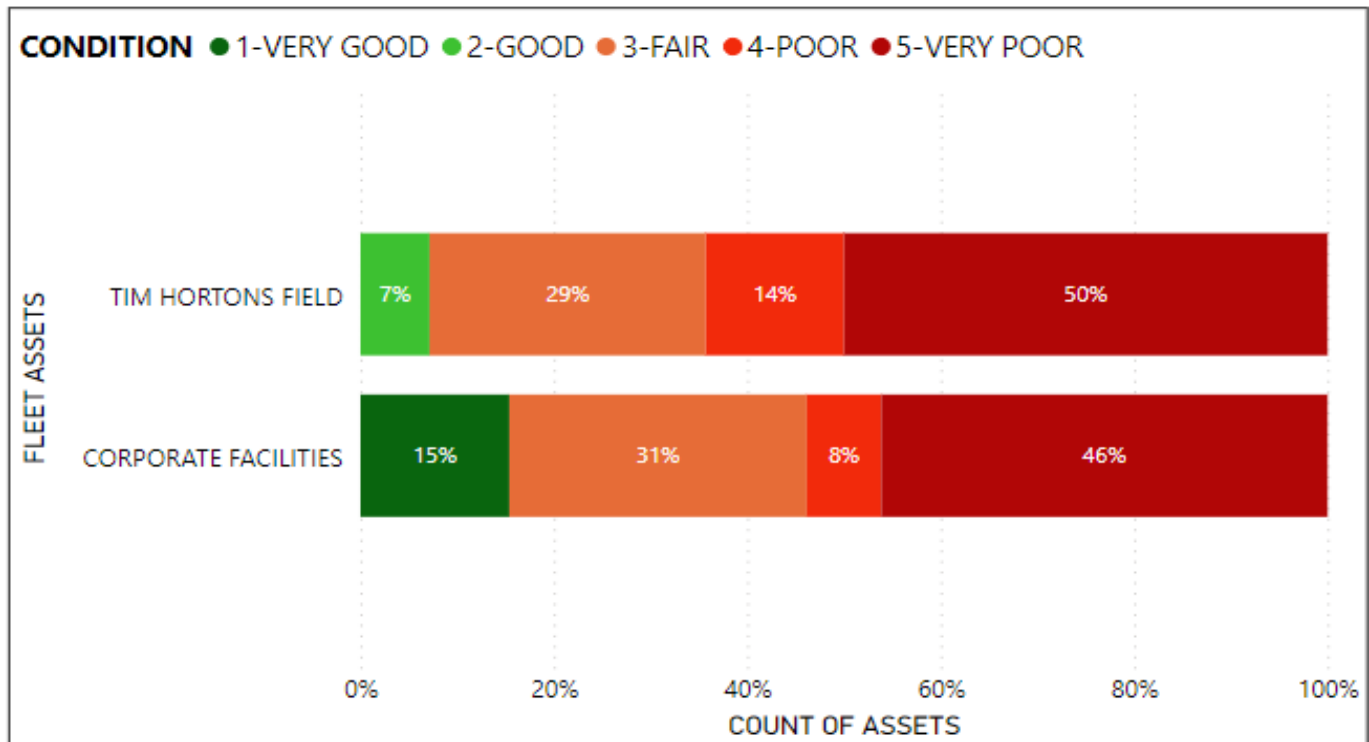
Vehicles are inspected and maintenance activities are conducted at specific intervals throughout the asset’s lifecycle however no formal condition rating is assigned to each vehicle. CFEM relies on the City of Hamilton Fleet services to assist with the inspection, maintenance and procurement of vehicles on their behalf, as described in **Table 9** below. Age has been used to estimate the condition of these assets where age is known which is considered to be low data confidence. This has been identified as a continuous improvement item in **Section 10.2**.

**Table 9: Inspection and Condition Information**

ASSET	INSPECTION TYPE	DESCRIPTION	FREQUENCY	CONDITION SCORE OUTPUT
Fleet	Servicing of vehicle	Regular maintenance checks are completed for vehicles	Based on Milage or Time passed	N/A

The condition profile for CFEM Fleet assets is shown below in **Figure 5**. It is evident that the majority of CFEM Fleet assets are in Fair or less than Fair condition. The condition of vehicles is based only on age and estimated service life and is considered a Low confidence level. The condition scores were developed from the RSL as detailed in **Table 5**.

**Figure 5: Fleet Asset Condition Profile**



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.2.3 ASSET USAGE AND PERFORMANCE

Assets are generally provided to meet design standards where available. As shown in **Table 10** below, known service performance issues for vehicle assets involve assets being beyond their Estimated Service Life which for Fleet assets involve an accumulation of Poor to Very Poor condition assets.

**Table 10: Known Service Performance Deficiencies**

ASSET	LOCATION	SERVICE DEFICIENCY	DESCRIPTION OF DEFICIENCY
Fleet	Various	CFEM vehicles past estimated service life recommendations	Results in increases in maintenance costs, potential safety concerns, and potentially interrupted service with more staff downtime

## 3.2.1 EQUIPMENT PROFILE

### 3.2.1.1 AGE PROFILE

The age profile of the equipment assets is shown in **Figure 6**. The age of these assets is considered to be high data confidence because they were recorded at the time of purchase. The majority of equipment was acquired in 2014 when Tim Horton’s Field was constructed.

**Figure 6: Equipment Age Profile**

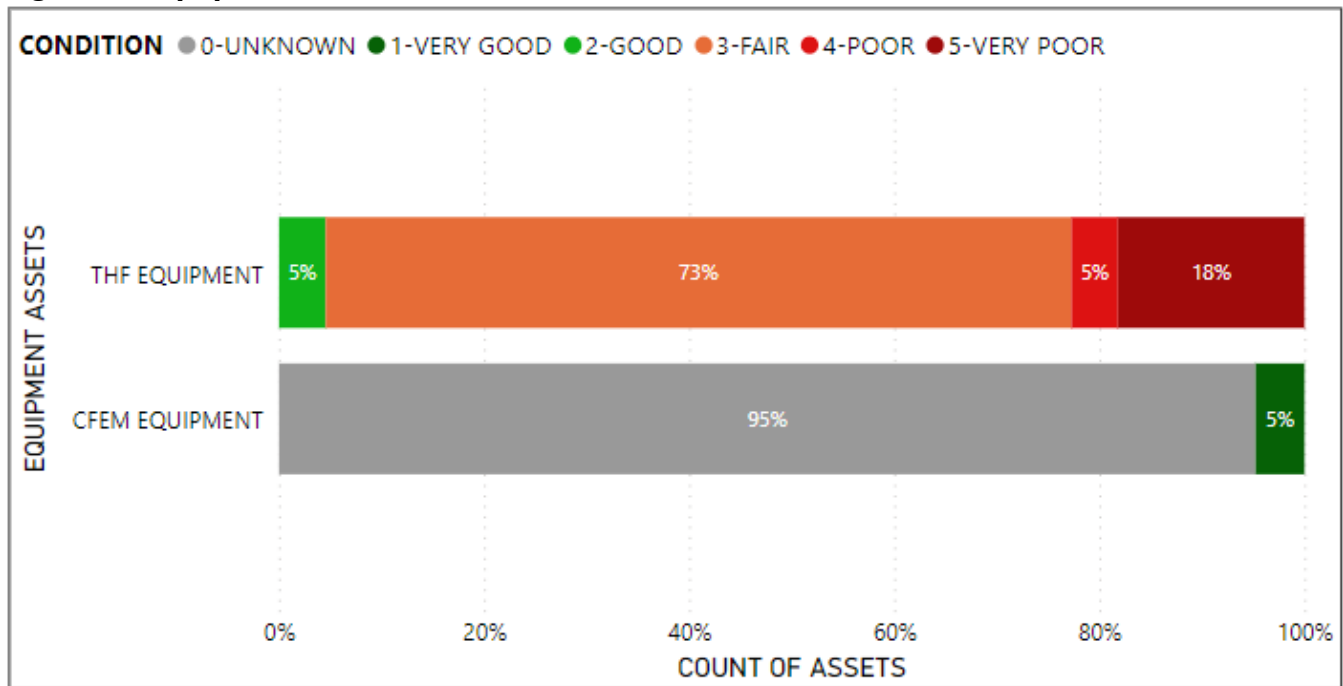


# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.1.2 CONDITION METHODOLOGY AND PROFILE

Since there is currently no condition data available for equipment, conditions were based on age with respect to the ESL, where available. A continuous improvement item indicated in **Section 10.2** is to develop a condition methodology to assess the condition of these assets. Furthermore, it is expected that in the future these assets will be integrated into the broader Enterprise Asset Management (EAM) system which is currently under development. This has been identified as a continuous improvement item in **Section 10.2**.

**Figure 7: Equipment Condition Profile**



As can be seen in **Figure 7**, the majority of the equipment assets with data available are in Fair condition. A portion of equipment was included which did not include age data, therefore condition is currently unknown.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.1.3 ASSET USAGE AND PERFORMANCE

Assets are generally provided to meet design standards where available. Known service performance issues are included in **Table 11** below.

**Table 11: Known Service Performance Deficiencies**

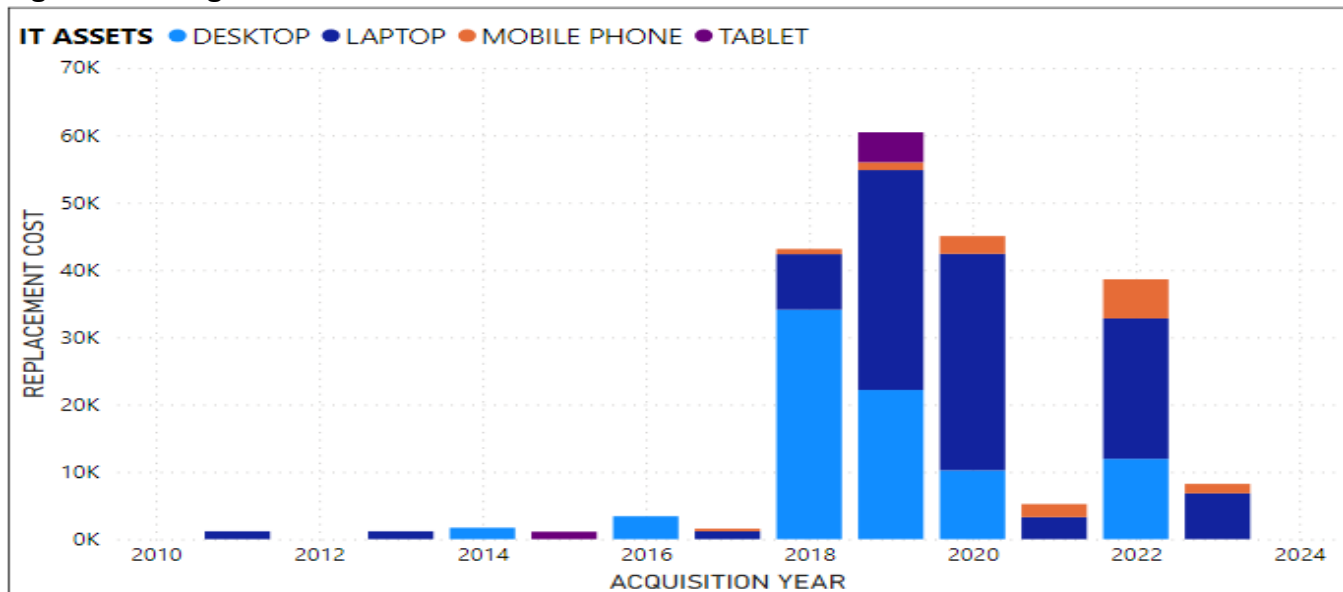
ASSET	LOCATION	SERVICE DEFICIENCY	DESCRIPTION OF DEFICIENCY
Generator	Lister Block	Generator Under Variance	The current fuel system is under variance and a future solution for energy and cost efficiency is in review.

## 3.2.2 IT PROFILE

### 3.2.2.1 AGE PROFILE

The age profile of the CFEM IT assets is shown in **Figure 8**. For IT assets the data confidence for age is typically High because asset age is formally tracked and many assets are replaced based on age. IT assets have an estimated service life of four to five years. Any assets older than 2019 should be reviewed and where necessary renewal should be considered. It should be noted that the intangible IT assets (i.e., facility management software) have been excluded from this analysis, which has been included as a continuous improvement item in **Section 10.2**.

**Figure 8: IT Age Profile**



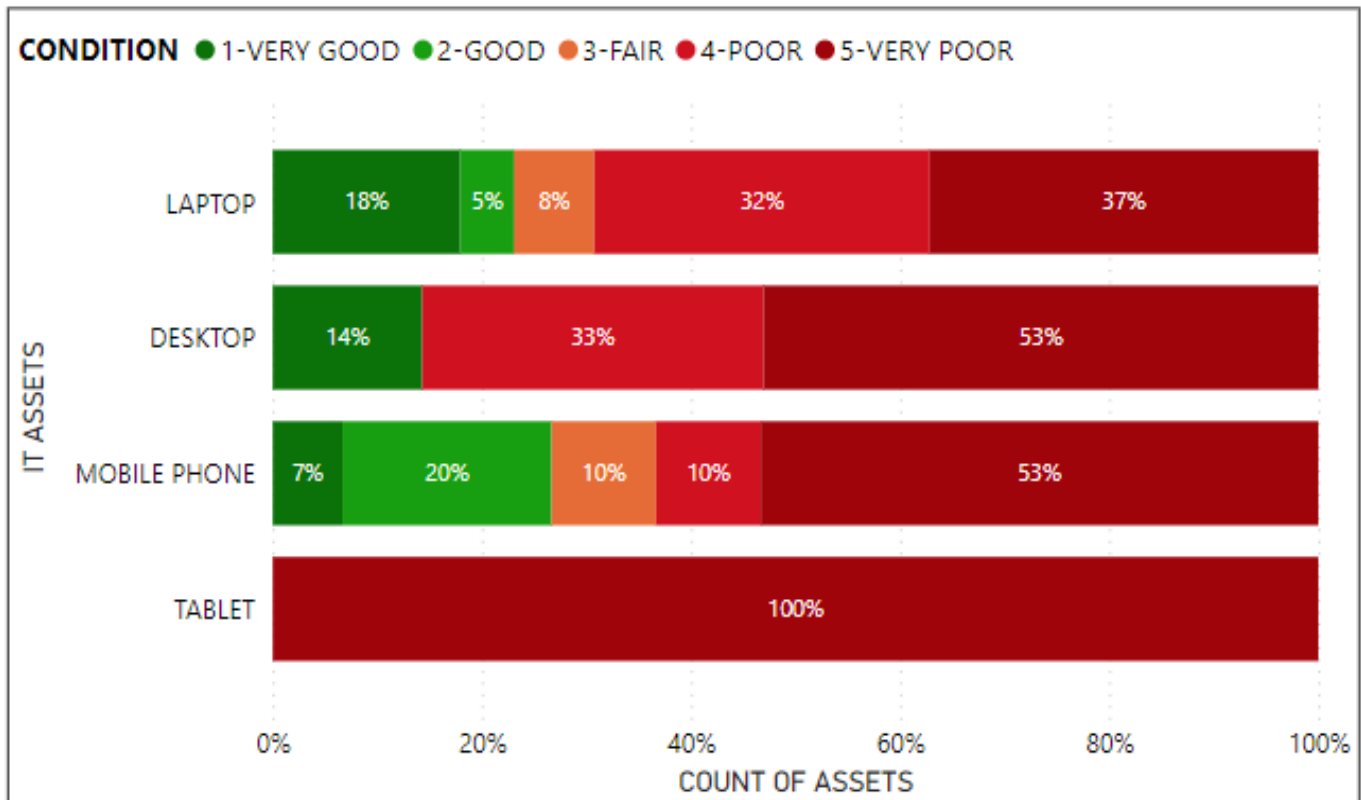


# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.2.2 CONDITION METHODOLOGY AND PROFILE

The majority of IT assets do not have a formal inspection program that provides a condition rating. The condition of IT assets is based only on age and estimated service life. The condition scores were developed from the RSL as detailed in **Table 5**.

**Figure 9: IT Condition Profile**



As can be seen in **Figure 9** above IT assets condition 37% of computer assets and 53% of both desktop and mobile assets are in Very Poor condition. However, it should be noted that this classification does not necessarily imply that these assets are not in acceptable working condition, as the calculation is purely age-based these assets should be investigated further prior to replacement.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 3.2.2.3 ASSET USAGE AND PERFORMANCE

Assets are generally provided to meet design standards where available. Known service performance issues for technology assets involve assets being beyond their Estimated Service Life, as shown in **Table 12** below.

**Table 12: Known Service Performance Deficiencies**

ASSET	SERVICE DEFICIENCY	DESCRIPTION OF DEFICIENCY
All IT Assets	Various purchases before 2019.	Beyond Service Life

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 4. MUNICIPALLY DEFINED LEVELS OF SERVICE

Levels of service are measures of what the City provides to its customers, residents, and visitors, and are best described as the link between providing the outcomes the community desires, and the way that the City provides those services.

O.Reg 588/17 does not define levels of service for these assets and therefore the City has developed municipally defined levels of service. Levels of service are defined in three ways, customer values, customer levels of service and technical levels of service which are outlined in this section. An explanation for how these were developed is provided in **Section 7.5** of the **AMP Overview**.

### 4.1 SURVEY METHODOLOGY

To develop customer values and customer levels of service, a Customer Engagement Survey entitled *Let's Connect, Hamilton – City Services and Assets Review: Corporate and Public Facilities Survey* was released on January 8, 2023, on the Engage Hamilton platform and closed on February 5, 2024. The survey results can be found in Appendix "A."

The survey received submissions from 86 respondents and contained 5 questions related to Corporate and Public Facilities. For the purpose of this report, data was evaluated from a confidence level perspective (margin of error at 95% confidence in sample size) and a data consistency (Standard deviation) perspective per **Table 13** below.

**Table 13: Data Confidence Levels**

GRADE	DATA CONSISTENCY (STANDARD DEVIATION)	CONFIDENCE LEVEL (MARGIN OF ERROR AT 95% CONFIDENCE IN SAMPLE SIZE)
Very High	0 to 0.5 – results are tightly grouped with little to no variance in response	0% to 5% - minimal to no error in results, can generally be interpreted as is
High	0.5 to 1.0 – results are tightly grouped but with slightly more variance in response	5% to 10% - error has become noticeable, but results are still trustworthy
Medium	1.0 to 1.5 – results are moderately grouped together, but most respondents are generally in agreement	10% to 20% - error is a significant amount and will cause uncertainty in the final results
Low	1.5 to 2.0 – results show a high variance with a fair amount of disparity in responses	20% to 30% - error has reached a detrimental level and results are difficult to trust
Very Low	2.0+ - results are highly variant with little to no grouping	30%+ - significant error in results, hard to interpret data in a meaningful way

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Based on an approximate population size of 570,000 and the table above, a sample size of 86 correlates to a 10.6% margin of error at 95% confidence, and therefore these survey results correspond with a maximum Medium confidence level. It is important to note that respondents were allowed to opt out of questions, and so different questions may have different confidence levels depending on the opt-out rate for that question. Therefore, the confidence levels presented differ throughout this section but remain within the Medium range.

Although the sample size correlates to a maximum medium confidence level, the data consistency also differed between questions. A high data consistency means that respondents came to the same conclusion more often for a question, whereas a low data consistency means that there is a split in respondent's opinions. Therefore, while CAM may be able to improve survey confidence levels over time by increasing the survey sample size, it may not be possible to improve data consistency over time as this depends on the opinions of the respondents and may require additional insight into why respondents' opinions are split. A low consistency of data does not mean the data is bad, but it does mean that it is difficult to make decisions using that information. Overall, data consistency was typically medium across all questions indicating most respondents are generally in agreement.

While the survey was used to establish customer values and customer performance measures, it is important to note that there were limitations to the survey methodology which may also reduce the confidence level in the survey data. The survey was released using an online platform and paper copies were made available at 6 municipal service centres and all 23 library branches. However, the survey did not include telephone surveys and consequently, there is no way to confirm the identity information provided in the survey. The location of the surveys meant that the participant pool would be limited to those who had visibility, time, and access to the survey. In addition, the survey did not control for IP addresses, and therefore it is possible that respondents could complete the survey more than once and skew the survey results.

The demographic responses for the survey did not indicate any clear evidence that the survey results had been skewed. When comparing the age and postal code demographics from the survey to the age and postal code demographics for the City, there does not appear to be a significant over-representation of any age or postal code demographic within the survey. In addition, the responses were distributed across the City with responses from most communities, however, there were limited responses from those who identified as marginalized. When assessing the spikes in respondents per day, the results were distributed across different ages and postal codes.

In summary, although there are limitations with the survey methodology and sample size, these results can be used to provide a general overview of the impressions from respondents. However, decisions should not be made based on these surveys alone and further investigation is required prior to proposing new levels of service.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

These results will be reviewed and improved upon for the next iteration of the AM Plan, which has been noted in **Section 10.2** as a continuous improvement item. The future intent is to repeat this survey over time and to measure the trends in customer satisfaction and ensure that the City is providing the agreed level of service.

Furthermore, it is crucial to emphasize that the results of these surveys cannot be solely attributed as an accurate indication of the performance of the CFEM Division. This is because although they provide oversight for many City facilities, they are not directly responsible for all services indicated in the survey across all facilities throughout the City. Various services are managed in-house by individual Asset Owners or by contracted third parties procured by Facilities adhering to the city's procurement policy by-law 21-255. However, the survey results do provide an overall indicator of how customers perceive the City to be performing in delivering facilities and services.

## 4.2 CUSTOMER VALUES

Customer values are what the customer can expect from their tax dollar in "customer speak" which outlines what is important to the customer, whether they see value in the service, and the expected trend based on the 10-year budget. These values are used to develop the level of service statements.

**Customer Values** indicate:

- What aspects of the service are important to the customer;
- Whether they see value in what is currently provided; and,
- The likely trend over time based on the current budget provision.

As previously mentioned, the customer values below were determined using the results from the *Let's Connect, Hamilton – City Services and Assets Review: Hamilton Corporate and Public Facilities* survey and are shown in **Table 14** below.

**Table 14: Customer Values**

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

CUSTOMER VALUES	CURRENT FEEDBACK	CONSISTENCY	EXPECTED TREND BASED ON PLANNED BUDGET (10-YEAR HORIZON)
It is most important to customers that facilities are accessible by providing ramps, snow-clearing, and accessible entryways.	The average survey respondent rated physical access as a very important service area.	High	Maintain
The following qualities are important to the community: Public facilities should be located nearby, should be inclusive and welcoming to promote a diverse and safe environment, and should be kept clean and in good repair.	The average survey respondent rated these service areas as important.	High	Maintain
Ensuring city facilities are environmentally conscious, considerate of climate, net-zero, and energy efficiency goals are not as important as other services being delivered.	The average survey respondent rated this service area as fairly important.	High	Maintain

## 4.3 CUSTOMER LEVELS OF SERVICE

Ultimately customer performance measures are the measures that the City will use to assess whether it is delivering the level of service the customers desire. Customer level of service measurements relates to how the customer feels about the City’s Corporate Facility and Tim Hortons Field services in terms of their quality, reliability, accessibility, responsiveness, sustainability and over the course, their cost. The City will continue to measure these customer levels of service to ensure a clear understanding of how the customers feel about the services and the value of their tax dollars.

The Customer Levels of Service are considered in terms of:

<b>Condition</b>	How good is the service? What is the condition or quality of the service?
<b>Function</b>	Is it suitable for its intended purpose? Is it the right service?
<b>Capacity/Use</b>	Is the service over or underused? Do we need more or less of these assets?

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

In **Table 15** under each of the service measures types (Condition, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current allocation.

**Table 15: Customer Levels of Service**

TYPE OF MEASURE	LEVEL OF SERVICE STATEMENT	SOURCE	PERFORMANCE MEASURE	CURRENT PERFORMANCE	EXPECTED TREND BASED ON PLANNED BUDGET
QUALITY / CONDITION	Ensure corporate and public facilities are maintained at an optimal level.	2024 Corporate and Public Facilities Survey	Average survey respondent opinion on how the City has performed overall in all aspects of corporate and public facilities.	Average Performance	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	
	Ensure that corporate and public facilities are clean and in good repair.	2024 Corporate and Public Facilities Survey	Average respondent opinion on performance regarding the cleanliness and good repair of corporate and public facilities.	Average Performance	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	
	Ensure that corporate and public facilities are accessible to the public.	2024 Corporate and Public Facilities Survey	Average survey respondent opinion on if corporate and public facilities were inclusive and welcoming.	Average Performance	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	
FUNCTION	Provide attractive and comfortable public facilities.	2024 Corporate and Public Facilities Survey	Average survey respondent's opinion on whether they agree that Hamilton's public facilities are comfortable, with appropriate levels of light and noise.	Probably Agree	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	

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TYPE OF MEASURE	LEVEL OF SERVICE STATEMENT	SOURCE	PERFORMANCE MEASURE	CURRENT PERFORMANCE	EXPECTED TREND BASED ON PLANNED BUDGET
FUNCTION	Provide public facilities that are well kept and functional.	2024 Corporate and Public Facilities Survey	Average survey respondents' opinion on whether they agree that walkways at Hamilton's public facilities are free from snow and debris.	Possibly Agree	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	
CAPACITY	Ensure that corporate and public facility sites and services are accessible to the public.	2024 Corporate and Public Facilities Survey	Average survey respondent opinion on whether they can find empty garbage receptacles around Hamilton's facilities.	Possibly Agree	Maintain
		<b>Confidence Level</b>		Medium	
		<b>Data Consistency</b>		Medium	
			Average survey respondent opinion on if corporate and public facilities are at a nearby location.	Average Performance	Maintain
		<b>Confidence Level</b>		Medium	
<b>Data Consistency</b>		Medium			



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## 4.3.1 CUSTOMER INDICES

The indices are calculated to assess how customer expectations for a service align with the perceived performance for corporate services as listed below in **Table 16**. These indices are explained and analyzed in detail in the sections below. Based on the results of the table, since the net differential exceeds 20 points overall for the service, there is generally a mismatch between customer expectations and perceptions.

**Table 16: Customer Indices**

CUSTOMER INDICES	AVERAGE RESULT
Service Importance Versus Performance Net Differential <sup>5</sup>	-21
Net Promoter Score (%) <sup>6</sup>	-30

As previously mentioned, since the survey had a sample size corresponding to a maximum medium confidence level, there is a minimum margin of error throughout the survey results of 11%. With a confidence level of only medium, it is difficult to make any conclusive decisions based on this survey alone. The information below is intended to provide context around the survey results to assist with finding areas to further investigate before proposing any new levels of service.

### SERVICE IMPORTANCE VERSUS PERFORMANCE INDICE

The Service Importance versus Performance indices is used to determine if a service's importance correlates with the perceived performance. Service areas where the average importance rating exceeds the average performance rating by 20 points is indicative of a mismatch between expectations and service levels, equal to one point on the Likert scale.

Per **Figure 10** below, many of the net differentials exceed 20 points for the services with a medium data consistency meaning that typically there is a mismatch between the importance of the service and how facilities are perceived to be performing in that aspect of the service. The services with the largest mismatch are "physical access" and "clean and in good repair." There could be investigation into improving the performance if different levels of service are proposed. To reduce the net differential, there would have to be an increase in performance to Very Good which would be accomplished by altering the Technical Levels of Service, as explained in **Section 4.3.3**.

<sup>5</sup> For these indices, a value close to 0 is considered a match, and a value exceeding 20 points indicates a mismatch between customer expectations, and perception or service levels.

<sup>6</sup> A positive net promoter score indicates customers would recommend the service to others, a negative score indicates they would not, and a value close to 0 indicates a neutral feeling about the service.

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**Figure 10: Importance versus Performance Index Score**

ServiceArea	Importance (index score)	Performance (index score)	Net Differential	Opt Out %
<b>Total</b>	<b>84</b>	<b>63</b>	<b>-21</b>	<b>11%</b>
Physical access (Examples: Ramps, snow-clearing, entryways)	93	66	-27	9%
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning (HVAC))	90	63	-27	8%
Location (Example: Nearby)	85	63	-21	7%
Inclusive and welcoming (Examples: Diverse and safe)	82	68	-14	13%
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	72	54	-18	19%

## NET PROMOTER SCORE INDICE

The Net Promoter Score indices outline how likely an individual is to recommend a service to another person and measure customer loyalty. For municipal services, this score is difficult to interpret because oftentimes individuals do not have many alternatives for utilizing different services and also there may be internal biases for certain service areas, however, this score does provide valuable information for if customers would recommend using the service or whether they may seek alternatives or avoid using the service altogether.

Likert<sup>7</sup> choices less than a score of 4 are considered 'Detractors' meaning that they would not recommend the service, while scores of 5 are considered 'Promoters' who would recommend the service, and scores of 4 are considered 'Passive' which means they do not have strong feelings about the service. Respondents who opted out by not answering or selecting 'Can't Say' were removed from the sample. Net Promoter score is calculated by subtracting (% Promoters) and (% Detractors). The Standard Deviation ( $\sigma$ ) is calculated in percent, the same units as the Net Promoter Score.

Based on the results below in **Figure 11**, a net negative net promoter score indicated that on average, customers would not recommend the use of the identified facilities to others. Specifically, City Hall was rated as having a worse net promoter score as compared to Municipal Service Centres. With a data consistency of only medium, the survey alone should not be used for decision-making. Additionally, it should be noted that with public facilities such as City Hall or a Municipal Service Centre, this score is difficult to interpret because often individuals do not have many alternatives for utilizing different services.

<sup>7</sup> A Likert scale is a rating scale used to measure opinions, attitudes, or behaviors. It consists of a series of five answer statements which are consistently written the same way (e.g. Very Good to Very Poor, Very Satisfied to Very Unsatisfied).

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**Figure 11: Net Promoter Score**

Service Area	$\sigma$	NPS	Detractors	Passives	Promoter	Avg.
All Service Areas	1.24	-30.07	75	36	32	3
City Hall	1.24	-36.99	41	18	14	3
Municipal Service Centres/Town Halls	1.23	-22.86	34	18	18	3

## 4.3.2 TECHNICAL LEVELS OF SERVICE

Technical levels of service are operational or technical measures of performance, which measure how the City plans to achieve the desired customer outcomes and demonstrate effective performance, compliance and management. The metrics should demonstrate how the City delivers its services in alignment with its customer values; and should be viewed as possible levers to impact and influence the Customer Levels of Service. The City will measure specific lifecycle activities to demonstrate how the City is performing in delivering the desired level of service as well as to influence how customers perceive the services they receive from the assets.

Technical service measures are linked to the activities and annual budgets covering Acquisition, Operation, Maintenance, and Renewal. Asset owners create, implement and control technical service levels to influence the service outcomes.<sup>8</sup>

**Table 17** shows the activities expected to be provided under the current 10-year Planned Budget allocation and the Forecast activity requirements being recommended in this AM Plan. Currently, these values are estimated based on the budget, but were not perfectly delineated in the capital and operating budgets and forecasts and may change in future iterations of the plan. This has been noted as a continuous improvement item in **Section 10.2**.

**Table 17 : Technical Levels of Service**

LIFECYCLE ACTIVITY	LEVEL OF SERVICE	ACTIVITY MEASURE	CURRENT ACTUAL PERFORMANCE 2023	CURRENT TARGET PERFORMANCE 2023	PROPOSED 10-YEAR PERFORMANCE
ACQUISITION	Introduce environmentally conscious facility assets.	Number of Net-Zero and LEED-certified buildings constructed.	0	0	1
		<b>Budget</b>	Captured in respective plans		
OPERATION	Maintain operational	Actual Operating	TBD	90-100%	90-100%

<sup>8</sup> IPWEA, 2015, IIMM, p 2|28.

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LIFECYCLE ACTIVITY	LEVEL OF SERVICE	ACTIVITY MEASURE	CURRENT ACTUAL PERFORMANCE 2023	CURRENT TARGET PERFORMANCE 2023	PROPOSED 10-YEAR PERFORMANCE
	contracts to ensure facilities are operated and maintained to standards	Expenditures vs Planned Budget			
		<b>Budget</b>	Not yet quantified <sup>9</sup>		
		Percentage of Tim Horton Field's total scheduled operating hours used for community rentals	1168	10% of scheduled hours (or 1100 hours annually)	10% of scheduled hours (or 1100 hours annually)
		<b>Budget</b>	TBD	TBD	TBD
		Percentage of ARCHIBUS work orders addressed within 30 days	85%	80%	80%
		<b>Budget</b>	TBD	TBD	TBD
<b>MAINTENANCE</b>	Assure facility maintenance and capital budgets rely on current and accurate information	Percentage of buildings with BCA's completed within a 5-year cycle	74%	100%	100% <sup>10</sup>
		<b>Budget</b>	\$0.5M	\$0.9M	\$5.4M
<b>RENEWAL</b>	Ensure that facility	Average Facility	7.6%	5-10%	5-10%

<sup>9</sup> This has been noted as a continuous improvement item in Section 10.2.

<sup>10</sup> This has been noted as a continuous improvement item in Section 10.2.

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LIFECYCLE ACTIVITY	LEVEL OF SERVICE	ACTIVITY MEASURE	CURRENT ACTUAL PERFORMANCE 2023	CURRENT TARGET PERFORMANCE 2023	PROPOSED 10-YEAR PERFORMANCE
	assets are maintained in good condition.	Condition Index of CFEM Facilities			
		<b>Budget</b>	Not yet quantified		
		Average Facility Condition Index of all City of Hamilton facilities	11%	5-10%	5-10%
		<b>Budget</b>	\$20.2M	Not yet quantified	
		Percentage of infrastructure life-cycle renewal projects meeting the latest standards for Accessibility and Building Code requirements	100%	100%	100%
		<b>Budget</b>	\$14.4M	\$14.4M	\$143.5M

### 4.3.3 PROPOSED LEVELS OF SERVICE DISCUSSION

Per the Technical Levels of Service, **Table 17**, it can be concluded that CFEM often meets technical standards with some exceptions. However, customer preferences and expectations do not always align with internal technical targets. The purpose of this section is to link the customer and technical levels of service to determine areas where different levels of service could be proposed. As previously mentioned, since the 2023 survey results have only a medium level of data confidence, it is difficult to make any conclusive decisions based on this initial survey. The discussion below is intended to provide context to direct CFEM to areas for further investigation based on these initial results before proposing any new levels of service.

In addition, the activity measures listed in the Technical Levels of Service table are not exhaustive and require additional data inputs to develop more specific measurements. As a

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continuous improvement item, the development of additional technical measurements to better compare customer and technical levels of service has been identified in **Section 10.2**. Further to this, another continuous improvement item identified is to incorporate the master accommodations plan into the development of survey metrics in the next iteration of the AM Plan.

## CONDITION / QUALITY

Based on the Customer Levels of Service **Table 15**, it is evident that survey respondents think that the City has an Average Performance overall in all aspects of the services included. As indicated in **Section 4.2**, the two most important service areas identified is maintaining physical access to facilities (e.g., ramps, snow-clearing, and entryways) and ensuring facilities are kept clean and in good repair. This service area can be linked to the following technical performance measures: percentage of lifecycle renewal projects meeting the latest standards for Ontario Building Code requirements, and percentage of ARCHIBUS work orders addressed within 30 days (with respect to orders related to providing accessible/clear entryways). Currently, CFEM is exceeding targets for ARCHIBUS work order turnaround and meeting expectations for completion of building code requirements.

The Customer Level of Service quality measurement of maintaining facilities in clean and good repair can be related to the Technical Levels of Service **Table 17** through the average Facility Condition Index of all City of Hamilton facilities metric. At the time of writing, the average FCI for all facilities was calculated to be 11 percent, which leaves room for improvement as the target value for the metric is between 5 and 10 percent.

Additionally, there is an opportunity for growth regarding the frequency of BCA inspections completed on City facilities. Currently, 74 percent of the buildings are inspected on a 5-year cycle, and in order to meet the target of 100 percent in year 1, additional budget and staffing would be required. This should be investigated following this report. As previously mentioned, CFEM does not yet have an internal survey to collect data from internal staff on the services provided. This has been identified as a continuous improvement item in **Section 10.2**.

## FUNCTION

While survey respondents thought that the City was providing an overall average level of performance in the service areas included, there are not technical performance measures currently available in order to propose levels of service as they relate to function. This requires more data accessible to accurately track performance. Potential metrics to track might include the frequency of snow clearing, grass cutting, or facility cleaning, which could be used to verify performance levels and better calibrate the CFEM teams' proposed level of service.

## CAPACITY

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Respondents agreed that the location of facilities was an important metric in the survey, in which there was a mismatch in relation to performance. With a net differential of -21, this indicates there is room for improvement in ensuring facilities are at a nearby location. This may suggest there is potentially a shortage of public buildings as it relates to overall population size, or there is a mismatch in where facilities are located in reference to the distribution of population density. More investigation in this area is required to better inform proposed levels of service, but this research may be beneficial in informing facility acquisition targets and locations.

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## 5. FUTURE DEMAND

Demand is defined as the desire customers have for assets or services and that they are willing to pay for. These desires are for either new assets/services or current assets.

The ability for the City to be able to predict future demand for services enables the City to plan ahead and identify the best way of meeting the current demand while being responsive to inevitable changes in demand. Demand will inevitably change over time and will impact the needs and desires of the community in terms of the quantity of services and types of service required.

CFEM's demands are diverse, as they function not only as a service provider in various capacities but also cater to different divisions within the city, each with distinct facility-related requirements. Given the multitude of design and legislative requirements specific to the construction and operation of facilities within each division, a comprehensive understanding of these demands is essential.

### 5.1 DEMAND DRIVERS

For CFEM the key drivers are population growth, legislative requirements, aging infrastructure and funding backlog.

- Population Growth
  - o Per page 45 in the ***AMP Overview***, it is evident that Hamilton's population will continue to grow to 2052. With a growing population, it is anticipated that an increased number of buildings will be constructed with corresponding maintenance and operational cost requirements.
- Legislative Requirements
  - o As regulatory requirements (e.g., energy efficiency, accessibility, etc.) for facilities expand, there are additional costs and challenges associated with their design and management. Particularly, incorporating Climate Change resiliency and Net Zero lens has been a priority for CFEM in major retrofits and new construction projects. This discussion has been identified in **Section 7**.
- Aging Infrastructure
  - o As the existing stock of managed buildings continues to age, it is expected there will be an increased demand for both costs and labour hours of the operations and maintenance and capital delivery teams required to upkeep those deteriorating assets.
- Vendor Contracts
  - o Demands related to managing vendor contracts are anticipated to increase over time, requiring additional staffing to meet this growth.



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- Funding Backlog
  - o While maintaining focus on handling high-priority projects, there exists a backlog of projects with associated costs that need to be addressed.

## 5.2 DEMAND FORECASTS

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented in **Table 18**. Growth projections have been shown on Page 45 in the **AMP Overview** document.

These additional demands as well as anticipated operations and maintenance costs have not been encompassed in the Lifecycle Models in **Section 8**. At this time these costs cannot be quantified due to insufficient data. This has been identified as a Continuous Improvement item in **Section 10.2**. In future versions, there is an opportunity to consolidate facility-related demand data from all non-core asset management plans. This can serve as a means to quantify the overall costs anticipated for the CFEM group going forward.

## 5.3 DEMAND IMPACT AND DEMAND MANAGEMENT PLAN

The impact of demand drivers that may affect future service delivery and use of assets is shown in **Table 18**. Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, insuring against risks, and managing failures.

Opportunities identified to date for demand management are shown in **Table 18**. Climate change adaptation is included in **Table 24**.

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**Table 18: Demand Management Plan**

DEMAND DRIVER	CURRENT POSITION	PROJECTION	IMPACT ON SERVICES	DEMAND MANAGEMENT PLAN
<b>Population Growth</b>	Hamilton's current population is 565,000.	In 10 years, the population expected to grow to approximately 625,000.	Increased population drives a need to acquire new Facilities.  Increased costs and resources will be required for CFEM to maintain the required assets.	Adjust AM Plan to include for operating impacts and the cost of owning and maintaining these additional assets.  Analyze staff, equipment and funding over the 10-year horizon to ensure it is sufficient to meet legislative requirements.  Incorporate resource requirements within the AM Plan and budgets to anticipate and communicate resourcing needs proactively.
<b>Aging Infrastructure</b>	City Facilities are on average, 49 years old.	It is expected that the average age will continue to increase	Increased average age of facilities leads to a need to do more infrastructure renewal and maintenance.  Increased costs and resources will be required for Hamilton to maintain the required assets.	Adjust the AM Plan to include operating impacts and the cost of owning and maintaining older assets.  Analyze staff, equipment and funding over a 10-year horizon to ensure it is sufficient to meet legislative requirements.  Incorporate resource requirements within the AM Plan and budgets to anticipate and communicate resourcing needs proactively.
<b>Historical and current annual infrastructure funding backlog</b>	An accumulated backlog of costs currently exists. (unquantified)	The funding gap will continue grow moving forward.	Historical and current backlog in annual infrastructure renewal funding means that assets are at high risk of failure and require greater ongoing maintenance and resources.	Adjust AM Plan to include historical and current backlog in annual infrastructure renewal funding.  Analyze staff, equipment and funding over a 10-year horizon to ensure it is sufficient to meet legislative requirements.  Incorporate resource requirements within the AM Plan and budgets to anticipate and communicate resourcing needs proactively.
<b>Number of vendors with operational contracts</b>	Status Quo (122)	May increase or decrease.	Additional staffing requirements. Either increase staff required to manage procurements or increase internal trade staff to perform services in-house.	Cost-benefit analysis to determine optimal path forward.
<b>Technological Changes</b>	Facilities are equipped with standard systems	Advancements in building technology will continue (e.g., Internet of Things devices)	Increased costs related to the installation, commissioning, and operation of new technology. Additional training to adapt staffing knowledge at pace with new technologies.	Analyze staff, equipment, and funding over the 10-year horizon to ensure it is sufficient to adopt technological changes.  Research upcoming trends in facility technologies to prepare for adoption of new systems.
<b>Legislative Requirements (E.g., accessibility, energy efficiency, structural requirements)</b>	Existing facilities are compliant with building code requirements.	Energy efficiency, accessibility requirements, and additional structural requirements will increase for new builds.	Increased average costs to construct new facilities and additional costs necessary to retrofit existing facilities.	Continue constructing facilities within requirements set forth by Ontario's Building Code. Maintain path forward to reach NetZero targets.

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## 5.4 ASSET PROGRAMS TO MEET DEMAND

The new assets required to meet demand may be acquired, donated or constructed. For CFEM assets are typically acquired or constructed. It is also essential to add full-time staff resources to compliment operations and maintenance of newly added facility assets.

At this time no asset acquisitions have been identified by the CFEM service groups, however, any growth in a number of facilities city-wide will commit the CFEM division to additional costs to provide their services to these assets. These future costs have not been estimated at this time in the Lifecycle Management Plan in **Section 8** but should be quantified further for future iterations of the report for consideration in developing higher confidence forecasts of future operations, maintenance and renewal costs for inclusion in the long-term financial plan.

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## 6. RISK MANAGEMENT

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2018 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: ‘coordinated activities to direct and control with regard to risk’<sup>11</sup>.

The City is developing and implementing a formalized risk assessment process to identify risks associated with service delivery and to implement proactive strategies to mitigate risk to tolerable levels. The risk assessment process identifies credible risks associated with service delivery and will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences.

The risk assessment process identifies credible risks, the likelihood of those risks occurring, and the consequences should the event occur. The City utilizes two risk assessment methods to determine risk along with subject matter expert opinion to inform the prioritization. Hamilton is further developing its risk assessment maturity with the inclusion of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable in the next iteration of the plan.

### 6.1 CRITICAL ASSETS

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarized in **Table 19**. Failure modes may include physical failure, collapse or essential service interruption.

**Table 19: Critical Assets**

CRITICAL ASSET	FAILURE MODE	IMPACT
Wentworth Street Operations Centre	Physical Failure	User groups/tenants are unable to access facilities resulting in service interruptions
Stoney Creek City Hall	Physical Failure	
Provincial Offences Administration	Physical Failure	
Lister Block	Physical Failure	
Hamilton City Hall	Physical Failure	

<sup>11</sup> ISO 31000:2009, p 2

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CRITICAL ASSET	FAILURE MODE	IMPACT
THF Fire Life Safety Equipment	Physical Failure	Unable to provide occupancy of the building to tenants (Hamilton Sports Group). Legal implications Negative reputation
THF Field of Play (Turf, Lights, Scoreboard)	Essential Service Interruption	Legal implications Negative reputation

By identifying critical assets and failure modes an organization can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

## 6.2 RISK ASSESSMENT

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, the development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable risks.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment costs of implementing the selected treatment plan is shown in **Table 20**. It is essential that these critical risks and costs are reported to management. Additional risks will be developed in future iterations of the plan and are identified in **Section 10.2** as a continuous improvement item.

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**Table 20: Risks and Treatment Plans**

SERVICE OR ASSET AT RISK	WHAT COULD HAPPEN	RISK RATING	RISK TREATMENT PLAN	RESIDUAL RISK	TREATMENT COSTS
CITY FACILITIES	Flooding	High	Evaluate Facilities Install sump pumps. Review the condition lifecycle model and adjust preventative maintenance measures.	Medium	TBD
CITY FACILITIES	Prolonged Power Outages	High	Demand review at each facility. Review the condition lifecycle model and adjust preventative maintenance measures. Investigate costing and feasibility of installing backup generators at all critical facilities.	Medium	TBD
CITY FACILITIES	Closing Facilities Due to Insufficient A/C (HVAC) Capacity	High	Demand review at each facility. Prioritize replacements for end-of-life equipment.	Medium	TBD
CITY FACILITIES	Building Declared Unsafe /Unusable	High	Building Condition Assessments. Preventative Maintenance Program. Regular visits by trained facilities staff.	Medium	TBD

Treatment costs outlined in **Table 20** are currently unknown and have not yet been incorporated into the lifecycle model. This has been identified as a Continuous Improvement item in **Section 10.2**.

## 6.3 INFRASTRUCTURE RESILIENCE APPROACH

The resilience of our critical infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions the City needs to understand its capacity to ‘withstand a given level of stress or demand’, and to respond to possible disruptions to ensure continuity of service. We do not currently measure our resilience in service delivery and this will be included in the next iteration of the AM Plan.

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Resilience covers the capacity of the City to withstand any service disruptions, act appropriately and effectively in a crisis, absorb shocks and disturbances as well as adapting to ever-changing conditions. Resilience is built on aspects such as response and recovery planning, financial capacity, climate change risk, assessment and crisis leadership.

## 6.4 SERVICE AND RISK TRADE-OFFS

The decisions made in AM Plans are based on the objective to achieve the optimum benefits from the available resources.

**Table 21** below outlines what activities CFEM cannot afford to do over the next 10 years with their existing budget and provides the associated service and risk tradeoffs.

**Table 21: Service and Risk Tradeoffs**

WHAT WE CAN NOT DO (What can we not afford over the next 10 years?)	SERVICE TRADE-OFF (How will not completing this affect our service?)	RISK TRADE-OFF (What risk consequences are we undertaking?)
Fund backlog of maintenance projects	Reduced levels of service. Service interruptions due to unforeseen closures of buildings.	Elevated costs due to reactive maintenance. Health and safety risks. Reputational risks.
Fund-targeted climate change mitigation projects	Continued contribution to climate change.	Reputational risks.
Tim Horton’s Field Scoreboard Replacement	Reduced levels of service.	Reputational Risk. Potential funding taken from other groups.

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## 7. CLIMATE CHANGE AND MITIGATION

Cities have a vital role to play in reducing the emission of greenhouse gases (mitigation), as well as preparing assets for the accelerating changes we've already begun to experience (adaptation). At a minimum, the City must consider how to manage our existing assets given the potential climate change impacts for our region.

Changes to Hamilton's climate will impact City assets in the following ways:

- Affect the asset lifecycle;
- Affect the levels of service that can be provided and the cost to maintain;
- Increase or change the demand on some of our systems; and
- Increase or change the risks involved in delivering service.

To quantify the above asset/service impacts due to climate change in the Asset Management Plan, climate change is considered as both a future demand and a risk for both mitigation and adaptation efforts. These demands and risks should be quantified and incorporated into the lifecycle models as well as levels of service targets.

If climate change mitigation/adaptation projects have already been budgeted, these costs have been incorporated into the lifecycle models. However, many asset owners have not yet quantified the effects of the proposed demand management and risk adaptation plans described in this section, and so associated levels of service and costs will be addressed in future revisions of the plan. This has been identified as a Continuous Improvement item in **Section 10.2**.

Further to the mitigation and adaptation projects required for the facilities within the scope of CFEM, it is crucial to highlight the additional demands imposed by the division to assist in city-wide implementation. With oversight on the entire inventory of City buildings, the projects mandated for execution on assets owned by each divisional group necessitate coordination with the CFEM team.

### 7.1 CLIMATE CHANGE MITIGATION

**Climate Mitigation** refers to human intervention to reduce GHG emissions or enhance GHG removals (e.g. building CFEM infrastructure that can support EV charging and adopt renewable energy generation). The City of Hamilton's Community Energy + Emissions Plan<sup>12</sup> (CEEP) includes five Low-carbon Transformations necessary to achieve the City's target of net-zero GHG emissions by 2050:

- Innovating our industry;
- Transforming our buildings;
- Changing how we move;
- Revolutionizing renewables; and
- Growing Green.

<sup>12</sup> Newbold, Skidmore, Chessman, Imhoff, & McDowell, 2022



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## Mitigation Demand Analysis

These transformations were incorporated into the climate mitigation demand analysis for this service area by:

- Identifying the City’s modelled targets for the low carbon transformations that applied to the service/asset;
- Discussing the impact the targets would have on the service/asset; and
- Proposing a preliminary demand management plan for how this modelled target will be achieved by 2050 as shown in **Table 22** below.

As previously mentioned, due to the high level of uncertainty with the demand management plans, the cost of the demand impacts below have not been included in the lifecycle models or levels of service at this time. The demand management plans discussed in this section should be explored by asset owners in more detail following the AM Plan, and new projects should incorporate GHG emissions reduction methods, and changes which will be incorporated into future iterations of the AM Plan. This has been identified as a continuous improvement item in **Section 10.2**.

Moving forward, the Climate Lens tool discussed in the **AMP Overview** will assess projects based on these targets and will assist with the prioritization of climate mitigation projects.

## Mitigation Demand Analysis

**Table 22: Climate Change Mitigation Transformation**

CLIMATE CHANGE MITIGATION TRANSFORMATION	MODELLED TARGET	IMPACT TO SERVICE OR ASSET	DEMAND MANAGEMENT PLAN
<b>Transforming our Buildings</b>	Post-retrofits, switch buildings to heat pumps for space and water heating by 2050	Facilities may be out of service for a period of time during the transition. Increased staffing needs to deliver projects.	Policies in place that support these initiatives. Facilities will need to be assessed to determine the feasibility of the proposed conversion. Funding will need to be acquired to retrofit buildings. Staff will need to be trained on a new system

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

CLIMATE CHANGE MITIGATION TRANSFORMATION	MODELLED TARGET	IMPACT TO SERVICE OR ASSET	DEMAND MANAGEMENT PLAN
<b>Transforming Our Buildings</b>	By 2050, all municipal buildings will be retrofitted to achieve 50% energy efficiency relative to 2016	Facilities may be out of service for a period of time during the transition. Increased staffing needs to deliver projects.	Facilities will need to be assessed to determine the feasibility of the proposed conversion.  Funding will need to be acquired to retrofit buildings. Determine construction schedule and financial forecast for funding required
<b>Transforming Our Buildings</b>	By 2050, all new municipal buildings achieve net-zero emissions	Any new buildings must be designed to Net Zero standard which will increase overall costs to any project from design through to build.	Consider FTE focused on funding opportunities and application process to assist in securing needed resources for new and retrofit opportunities. Policies in place that support these initiatives. Determine \$/SF value to convert buildings to NetZero to get an estimate of the total portfolio (500 buildings).
<b>Changing How We Move</b>	100% of new municipal small and light-duty vehicles are electric by 2040	Electrical Vehicle chargers will need to be installed at most facilities. Compensation for staff who charge City vehicles at home will need to be considered. Initial upfront capital costs for electric vehicles	A business case for electric vehicle conversion will be developed.  All Facility infrastructure (electrical load) will be impacted and plan for increased costs above actual charging station installation.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

CLIMATE CHANGE MITIGATION TRANSFORMATION	MODELLED TARGET	IMPACT TO SERVICE OR ASSET	DEMAND MANAGEMENT PLAN
Revolutionizing Renewables	By 2050, 50% of municipal buildings will add rooftop solar PV, covering 30% of the building's electrical load	Initial capital costs are required. Facilities may require closure during installation.	The impact on the entire grid infrastructure will need to be considered to ensure this can reasonably happen.  Considerations to new builds and retrofit roofs structure for load impact of Solar PV.
Revolutionizing Renewables	Purchase of remaining RNG is needed to replace all remaining natural gas demand by 2050, starting in 2025.	Increased costs on utilities budget	Consider circular economies and regional opportunities for potential future supply to assist in reducing costs.

## MITIGATION RISK ANALYSIS

Additionally, since the risk of not completing climate change mitigation projects is that the City continues to contribute to climate change in varying degrees which were modelled in the Climate Science Report for the City of Hamilton completed by the International Council for Local Environmental Initiatives (ICLEI) Canada, a risk analysis has not been completed in this AM Plan for not completing climate mitigation projects (ICLEI Canada, 2021).

## CURRENT MITIGATION PROJECTS

Mitigation projects CFEM is currently pursuing are outlined below in **Table 23**. These projects are not included in the lifecycle models, as their funding is not yet secured.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

**Table 23: Asset Climate Mitigation Projects**

PROJECT	CLIMATE CHANGE MITIGATION TRANSFORMATION	PROJECT DESCRIPTION	CLIMATE CHANGE IMPACT
<b>Macassa Lodge Equipment Upgrades</b>	Transforming our Buildings	Replacement of atmospheric boilers with higher efficiency condensing boilers.	GHG reductions.
<b>Recreation Pools Heat Reclaim</b>	Transforming our Buildings	Installation of heat reclaim and controls in all recreation centres' indoor pool systems	GHG reductions.
<b>Low Flow Showerheads and Drain Heat Recovery</b>	Transforming our Buildings	Replacement of existing showerheads in recreation facilities public showers to low flow models and implement heat recovery from drains	GHG reductions.
<b>Harry Howell Arena, Fire Station 5, and Ryerson Recreation Centre Equipment Retrofits</b>	Transforming our Buildings	Electrification of equipment in facilities.	GHG reductions.

## CLIMATE MITIGATION DISCUSSION

Updates to the boiler system are to occur at Macassa Lodge which will improve the operational efficiency of the facility. Electrification of equipment at this facility is currently not being considered as the existing electrical service capacity cannot support such conversions. This scenario highlights the challenges faced by CFEM, which will be a widespread issue across the portfolio of buildings they manage. Each facility will require independent analysis to determine the feasibility of electrifying equipment in support of reaching the Net-Zero goals established.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 7.2 CLIMATE CHANGE ADAPTATION

**Climate Adaptation** refers to the process of adjusting to actual or expected climate and its effects (e.g. building facilities that can handle new climate loads).

The impacts of climate change may have a significant impact on the assets we manage and the services they provide. Climate change impacts on assets will vary depending on the location and the type of services provided, as will the way in which those impacts are responded to and managed.<sup>13</sup>

In 2021, the City of Hamilton completed a Vulnerability and Risk Assessment Report<sup>14</sup> guided by ICLEI’s Building Adaptive and Resilient Communities (BARC) Framework as part of the Climate Change Impact Adaptation Plan (CCIAP) (ICLEI, 2021). The BARC Framework identified thirteen high-impact areas.

### Adaptation Demand Analysis

Climate adaptation demands for CFEM are shown below in **Table 24**.

**Table 24: Managing the Demand of Climate Change on Assets and Services**

ADAPTATION IMPACT STATEMENT	BASELINE (1976 - 2005) <sup>15</sup>	AVERAGE PROJECTED CHANGE 2021-2050 <sup>15</sup> (ASSUMING RCP4.5 <sup>16</sup> SCENARIO)	POTENTIAL IMPACT ON ASSETS AND SERVICES	DEMAND MANAGEMENT PLAN
Changes in the frequency of extreme rainfall events will result in increased instances of flooding on private and public properties	6.7 total heavy precipitation days (20mm)	7.7 total heavy precipitation days (20mm)	Flooding	Inspect and verify the adequacy of sump pumps in existing facilities. Investigate flood potential in new builds.

<sup>13</sup> IPWEA Practice Note 12.1 Climate Change Impacts on the Useful Life of Infrastructure

<sup>14</sup> City of Hamilton & Local Governments for Sustainability Canada, 2021

<sup>15</sup> ICLEI Canada, 2022

<sup>16</sup> RCP4.5 Scenario: Moderate projected Green House Gas concentrations, resulting from substantial climate change mitigation measures. It represents an increase of 4.5 W/m<sup>2</sup> in radiative forcing to the climate system. RCP 4.5 is associated with 580-720ppm of CO<sub>2</sub> and would more than likely lead to 3°C of warming by the end of the 21st century.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

ADAPTATION IMPACT STATEMENT	BASELINE (1976 - 2005) <sup>15</sup>	AVERAGE PROJECTED CHANGE 2021-2050 <sup>15</sup> (ASSUMING RCP4.5 <sup>16</sup> SCENARIO)	POTENTIAL IMPACT ON ASSETS AND SERVICES	DEMAND MANAGEMENT PLAN
<b>Increases in heat-related issues due to extreme heat</b>	16.1 average days where the temperature is 30 degrees Celsius or more	34.4 average days where the temperature is 30 degrees Celsius or more	Increased load and chance of failure in HVAC systems	Ensure timely preventative maintenance routines. Calibrate HVAC system upgrades to match the expected increase in cooling demand.
<b>Increased intensity and frequency of ice storms lead to increased hazardous roads, pathways and sidewalk conditions.</b>	187 mm average total winter precipitation	204 mm average total winter precipitation	Elevated risk of injury	Increase snow removal contracts. Ensure salt bins are available at all facilities.
<b>Prolonged power outages during winter months due to an increase in ice storms resulting in public safety concerns.</b>	187 mm average total winter precipitation	204 mm average total winter precipitation	Lack of power to provide all services.	Fully reliable backup generation to all systems in all potential warming stations that will provide safety to citizens.

## ADAPTATION RISK ANALYSIS

Additionally, the City should consider the risks for the asset or service as a result of climate change and consider ways to adapt to reduce the risk. Adaptation can have the following benefits:

- Assets will withstand the impacts of climate change;
- Services can be sustained; and,
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

Similarly, to the exercise above and using the risk process in **Section 6**, asset owners:

- Reviewed the likelihood scores in the Vulnerability and Risk Assessment Report for the adaptation impact occurring;
- Identified the consequence to the asset/service if the event did happen to develop a risk rating; and,
- If the risk was identified as high, the asset owner produced a preliminary risk adaptation plan shown below in **Table 25**.

It is important to note that due to the high level of uncertainty with the climate change risk adaptation plans, the cost of mitigating the risks below has not been included in the lifecycle and financial models at this time. The adaptation plans discussed in this section should be explored by asset owners in more detail following the AM Plan, and new projects should consider these risks during the planning and design processes. Future changes will be incorporated into future iterations of the AM Plan. Moving forward, the Climate Lens tool will assess projects based on these targets and will assist with the prioritization of climate adaptation projects. This has been identified as a continuous improvement item in **Section 10.2**.

**Table 25: Adapting to Climate Change**

ADAPTATION IMPACT STATEMENT	SERVICE OR ASSET AT RISK DUE TO IMPACT	WHAT COULD HAPPEN	RISK RATING	RISK ADAPTATION PLAN
Prolonged power outages during winter months due to an increase in ice storms resulting in public safety concerns	<b>Facilities</b>	Prolonged power outages due to an increase in ice storms	High	Review the condition of and/or install backup generators augmented by renewables and battery storage
Reduced capacity of flood protection measures and water storage caused by an increase in rainfall intensity leading to flooding.	<b>Facilities</b>	Increase in rainfall intensity leading to flooding	High	Review requirements for new buildings to include stricter stormwater management designs and criteria

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## CURRENT ADAPTATION PROJECTS

A current climate change adaptation project is shown below in **Table 26**.

**Table 26: Asset Climate Adaptation Projects**

PROJECT	ADAPTATION IMPACT STATEMENT	PROJECT DESCRIPTION
<b>Mountain Transit Centre (MTC) Stormwater Review</b>	Changes in the frequency of extreme rainfall events will result in increased instances of flooding.	A study to evaluate the existing conditions of the MTC to develop preventative alternatives to ensure that adequate drainage/diversion measures exist to properly service the site.

## CLIMATE ADAPTATION DISCUSSION

The adaptation project mentioned in the preceding table is presently in the study phase, with no implementation plans or funding arrangements in place. Findings from the study will inform opportunities for adapting to future climate change impacts, particularly concerning stormwater management. Extensive examination is necessary throughout the City's entire land and facility holdings to determine the proper measures for adapting to anticipated climate change impacts.



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 8. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the City plans to manage these assets at the agreed levels of service and at the accepted lifecycle costs while excluding inflationary values. The costs included in the lifecycle management plan include costs from both the Capital and Operating budgets. Asset management focuses on how taxpayer or ratepayer dollars are invested by lifecycle activities and not by budget allocation. Since both budgets contain various lifecycle activities, they have been consolidated together and separated by lifecycle activity in this section.

As a result of this new process, there may be some areas where the budget was not able to be broken down perfectly by lifecycle activity. Future AM Plans will focus on improving the understanding of Whole-Life-Costs and funding options, which has been noted as a continuous improvement item in **Section 10.2**. However, at this time the plan is limited on those aspects. Expenditure on new assets and services will be accommodated in the long-term financial plan but only to the extent that there is available funding.

### 8.1 ACQUISITION PLAN

The acquisition reflects new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its current capacity. They may result from growth, demand, legal obligations or social or environmental needs. Assets can either be donated through development agreements to the City or through the construction of new assets which are mostly related to population growth.

Currently, the CFEM group has not identified acquisitions related to the needs required of their division. However, as part of their management of buildings for divisions across the city, the acquisitions identified within the asset management plans respective to each division will impose additional demands on the CFEM team in the form of additional staff for operations. At this stage, this aggregate growth in facility acquisitions across the city has not been quantified. Incorporating these cumulative costs through an increased level of collaboration between the CFEM team and each division throughout the city has been established as a continuous improvement item.

### 8.2 OPERATIONS AND MAINTENANCE PLAN

Operations include all regular activities to provide services. Daily, weekly, seasonal and annual activities are undertaken by staff to ensure the assets perform within acceptable parameters and to monitor the condition of the assets for safety and regulatory reasons. Examples of operational activities include electrical system safety inspections, building condition assessments, cleaning, or painting.

Currently, the facilities management team is responsible for managing contracts for 122 vendors across the City. As previously mentioned in Section 2, the operational needs included within the

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

lifecycle model as outlined in **Figure 12** consist of both the costs associated with operating the 10 facilities CFEM has been identified as an asset owner of, in addition to the full staffing costs for the CFEM group which carries out work for facilities on a city-wide scale. These responsibilities would include budgets for work such as capital planning, leased facility management, compliance programs, and contract management.

Maintenance should be viewed as the ongoing management of deterioration. The purpose of planned maintenance is to ensure that the correct interventions are applied to assets in a proactive manner and to ensure it reaches their intended useful life. Maintenance does not significantly extend the useful life of the asset but allows assets to reach their intended useful life by returning the assets to a desired condition.

Examples of typical maintenance activities include equipment repairs and component replacements along with appropriate staffing and material resources required to perform these activities.

Proactively planning maintenance significantly reduces the occurrence of reactive maintenance which is always linked to a higher risk to human safety and higher financial costs. The City needs to plan and properly fund its maintenance to ensure the full network is reliable and can achieve the desired level of service. These investments for maintenance are intended to allow these assets to reach their estimated service life and minimize reactive maintenance costs.

Capital projects are typically established on a yearly basis and prioritized according to the severity of need. This triaged model of funding allocation is based on an overall lack of funding to meet an existing backlog of maintenance needs, while the implementation of preventative maintenance projects poses an even greater financial hurdle. In this model, funding "blocks" are established for standard high-cost capital works (e.g., roof replacements), which are not designated to specific facilities but instead allow flexibility for distribution as necessary based on priority. It is noted as a continuous improvement item in **Section 10.2** for the facilities team to develop a more systematic model of forecasting major maintenance projects through leveraging data provided by BCA reports as well as asset management plans.

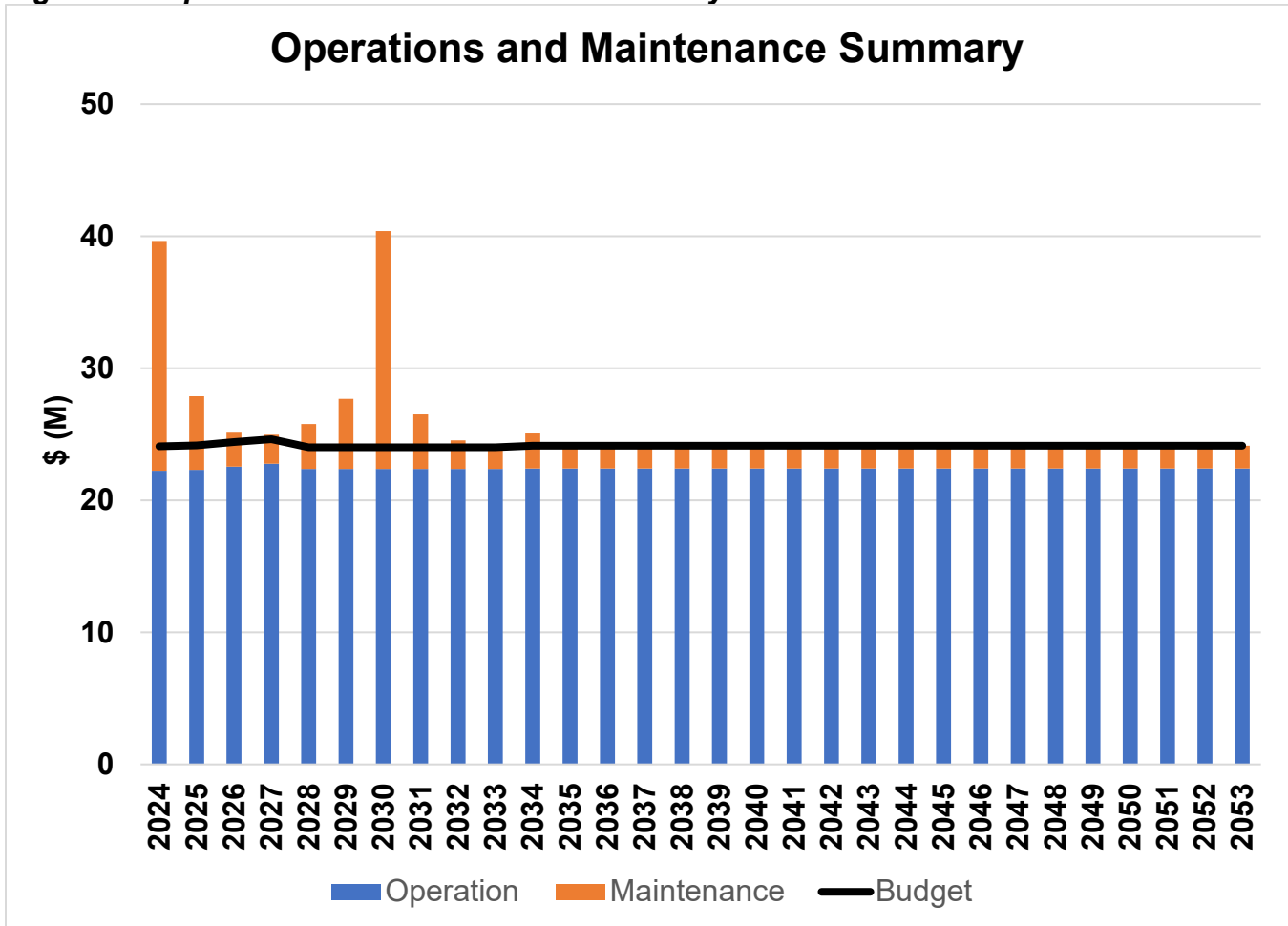
It should be acknowledged that these forecasted costs only include lifecycle replacements and do not yet fully include the recommended works that need to be undertaken to ensure the entire inventory assets achieve their desired service lives and level of service. Additionally, it should be noted that as the City continues to grow and invest in new facilities, these assets will impose further demands on the CFEM team to implement and carry out the necessary operations and maintenance projects ongoing.

Deferred maintenance (i.e. works that are identified for maintenance activities but unable to be completed due to available resources) will be included in the infrastructure risk management plan in future iterations once those works have been identified and prioritized. Currently, aggregate data on the full maintenance backlog for all City facilities has not been quantified due to a lack of reliable data. This has been noted as a continuous improvement item in **Section 10.2**.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

The maintenance costs included within the lifecycle model as outlined below in **Figure 12** consist exclusively of the 10 facilities CFEM has been identified as an asset owner. Future iterations of this asset management plan are anticipated to incorporate the entire maintenance backlog of all facilities across the city, but at this time has been noted as a continuous improvement item.

**Figure 12: Operations and Maintenance Summary**



Per **Figure 12** above, it is evident that there are major spikes in maintenance needs over the planning term. The elevated maintenance needs in the initial year (2024) represent the backlog of deferred maintenance projects that are unresolved due to budget constraints. Another unfunded spike in maintenance requirements is observed in 2030, which includes large replacement costs for audio-visual equipment in Tim Horton’s Field. These currently unfunded maintenance works are necessary updates as required by their existing contractual obligations with the Hamilton Tiger-Cats and Forge FC, which will require funding to complete. This poses a risk to the availability of capital funding for other divisions of the city, as these system upgrades are non-negotiable and may take precedence over other required works.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 8.3 RENEWAL PLAN

Renewal is major works which does not increase the asset's design capacity but restores, rehabilitates, replaces, or renews an existing asset to its original service potential. Works over and above restoring an asset to its original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs

Asset renewals are typically undertaken to either ensure the assets' reliability or quality will meet the service requirements set out by the City. Renewal projects are often triggered by service quality failure and can often be prioritized by those that have the highest consequence of failure, have high usage, have high operational and maintenance costs and other deciding factors.

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in **Table 27** and are based on the estimated design life for this iteration. Future iterations of the AM Plan will focus on the Lifecycle approach to ESL which can vary greatly from design life. Asset useful lives were last reviewed in 2023 however they will be reviewed annually until their accuracy reflects the City's current practices.

**Table 27: Useful Lives of Assets**

ASSET SUBCATEGORY	AVERAGE ESTIMATED SERVICE LIFE (YEARS)
Facilities	50 or 75
Heritage Facilities	150
Equipment	18
IT Assets	4.5
Fleet	11.3

## RENEWAL RANKING CRITERIA

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g., Facilities can process required volumes); or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g., Vehicles are reliable).<sup>17</sup>

<sup>17</sup> IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

Future methodologies may be developed to optimize and prioritize renewals by identifying assets or asset groups that:

- Have a high consequence of failure;
- Have high use and the subsequent impact on users would be significant;
- Have higher than expected operational or maintenance costs; and,
- Have the potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.<sup>18</sup>

## SUMMARY OF FUTURE RENEWAL COST

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in **Figure 13**.

Please note that the facilities listed below have been granted heritage status:

Hamilton City Hall and Garage:

- Lister Block
- Dundas Town Hall

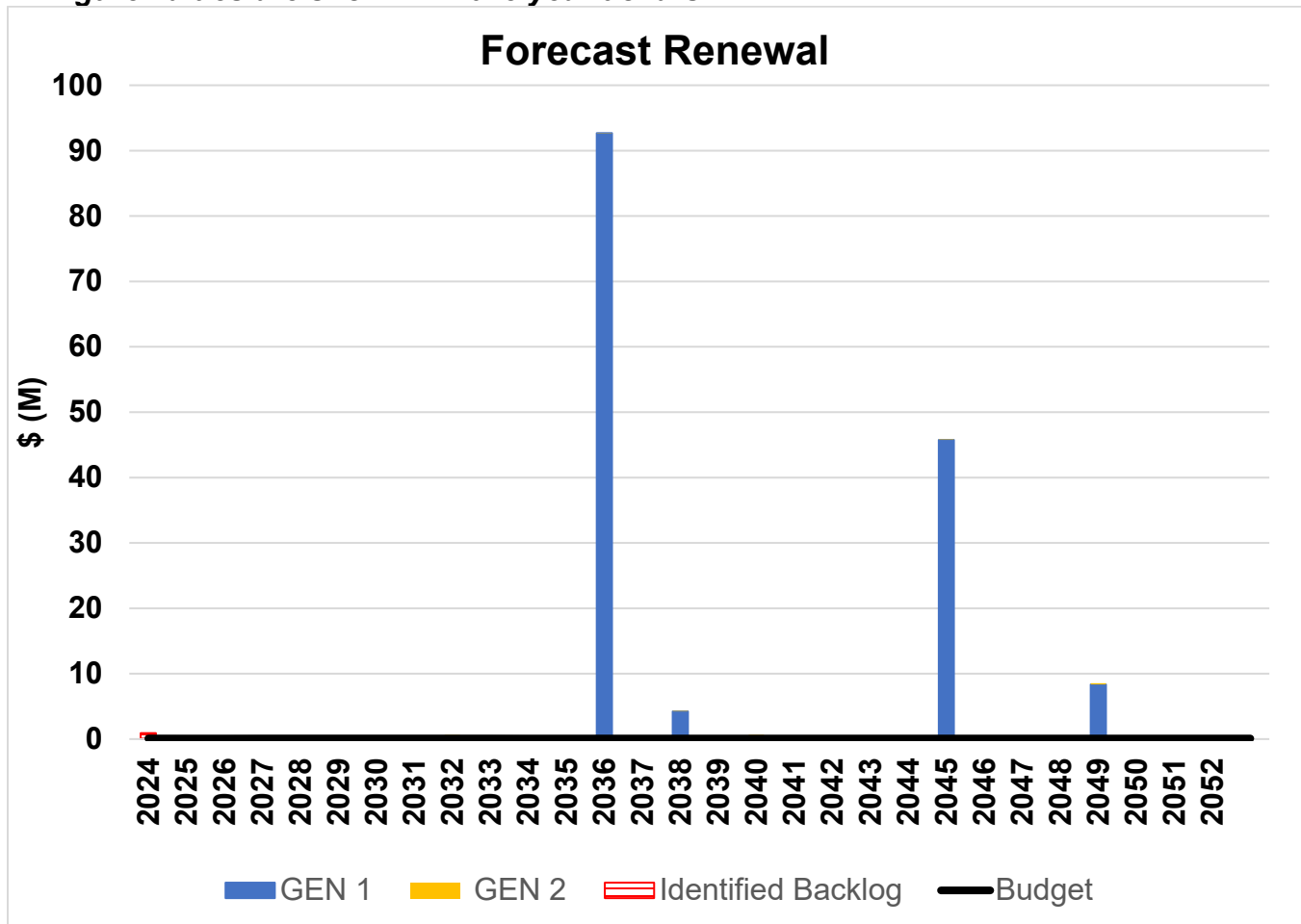
Consequently, their estimated service life (ESL) has been extended as a full renewal is not planned. Instead, maintenance projects will be carried out continuously. Although these buildings have surpassed the standard ESL for typical facilities, they are not part of the renewal schedule outlined in **Figure 13**.

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<sup>18</sup> Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

**Figure 13: Forecast Renewal Costs**  
All figure values are shown in 2023 year dollars.



Major renewals included in the above graph include the Provincial Offences Administration building in 2036 and Stoney Creek City Hall in 2049. These facilities are set for renewal based on the estimated service life (75 and 50 years, respectively) of each asset, as provided by the Facilities division. While these unfunded renewals have been included in the lifecycle forecast, a detailed review of these facilities is expected to occur at a time closer to their anticipated replacement year to determine a sound financial strategy for the asset. At that time the building should be evaluated based on factors such as condition, usage, capital works required, etc., to determine if a full replacement is necessary. It is evident that there are minimal renewal costs required in the initial 10-year cost projection, particularly when compared to the renewal values estimated for the aforementioned facilities. This aspect is crucial to bear in mind when interpreting the results of the renewal funding rates calculated in **Section 9.1**. Also included in the above graph is the anticipated renewal of the Wentworth Street Operations Centre in 2038. However, it is important to highlight that only a fraction of the total replacement value of the building was incorporated, based on the percentage of floor area (3.2%) occupied by CFEM at the time of writing. As a shared occupier of the facility, the remaining total replacement value of the building is captured in the individual AM plans of each additional occupant.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 8.4 DISPOSAL PLAN

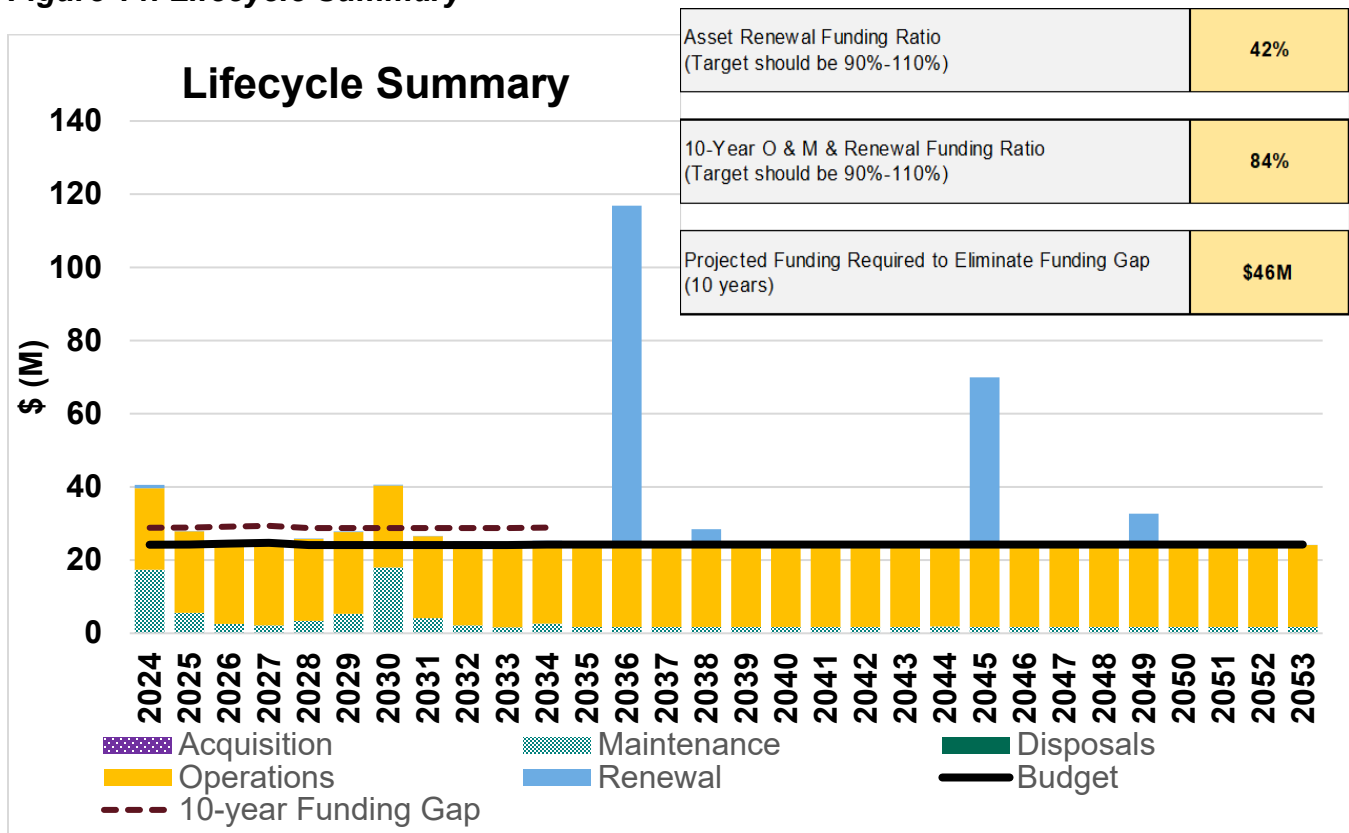
Disposal includes any activity associated with the disposal of a decommissioned asset including sale, possible closure of service, decommissioning, disposal of asset materials, or relocation. Disposals will occur when an asset reaches the end of its useful life. The end of its useful life can be determined by factors such as excessive operation and maintenance costs, regulatory changes, obsolescence, or demand for the asset has fallen. No disposals were identified or incorporated into the lifecycle model.

## 8.5 LIFECYCLE COST SUMMARY

The financial projections from this asset plan are shown in **Figure 14**. These projections include forecast costs for operation, maintenance, and renewal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs estimated to minimize the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving a balance between costs, levels of service and risk to achieve the best value outcome.

**Figure 14: Lifecycle Summary**



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

The above lifecycle summary presents an overall picture of the financial status of CFEM as it relates specifically to the ten facilities identified in scope. There are funding gaps observed due to previous funding deficits creating a backlog of deferred maintenance, as well as upcoming maintenance projects that are not currently identified within the group's budgets. CFEM will need to continue to increase its budget annually to fund these deferred maintenance activities, address identified future maintenance and to fund increasing reactive maintenance work that can occur due to the aging infrastructure. The 10-year funding gap is further explained in **Section 9.1**.

In addition, while this figure provides a snapshot of the gaps identified within the CFEM portfolio of buildings, it is important to note that CFEM is also responsible for managing buildings across the City which consists of a much larger aggregated funding gap that is spread across all individual AM Plans. At the time of writing, this gap has not yet been quantified in full. Furthermore, because no acquisitions were identified, the operations costing remain fixed as we assume the status quo. Although it is anticipated these costs will increase in the future due to the demand drivers previously outlined, these remain unquantified.

Currently, CFEM has no planned budget to address the renewal work that is projected over the 30-year horizon. There are significant forecasted asset renewals projected for 2036 with renewal values of \$93M and \$46M in 2045. CFEM would benefit from seeking out long-term financial strategies to adequately plan for this significant future expenditures.

Without sufficient funding, the City has little option but to defer these necessary lifecycle activities. Deferring important lifecycle activities is never recommended. The City will benefit from allocating sufficient resources to developing its long-term financial plan to ensure that over time the City can fully fund the necessary lifecycle activities. Funding these activities helps to ensure the assets are compliant, safe, and effectively deliver the service the customers need and desire.

The City will continue to improve its lifecycle data, and this will allow for informed choices as to how best to mitigate impacts and how to address the funding gap itself. In future plans, this funding gap will be refined over the next three years to improve the confidence and accuracy of the forecasts.



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 9. FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this AM Plan. Effective asset and financial management will enable the City to ensure CFEM provides the appropriate level of service for the City to achieve its goals and objectives. Reporting to stakeholders on service and financial performance ensures the City is transparently fulfilling its stewardship accountabilities.

Long-term financial planning (LTFP) is critical for the City to ensure that network lifecycle activities such as renewals, operations, maintenance, and acquisitions can happen at the optimal time. The City is under increasing pressure to meet the wants and needs of its customers while keeping costs at an affordable level and maintaining its financial sustainability.

Without funding asset activities properly for CFEM the City will have difficult choices to make in the future which will include options such as higher costs reactive maintenance and operational costs, reduction of service and potential reputational damage.

Aligning the LTFP with the AM Plan is critical to ensure all of the network's needs will be met while the City is finalizing a clear financial strategy with measurable financial targets. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

### 9.1 SUSTAINABILITY OF SERVICE DELIVERY

There are two key indicators of sustainable service delivery that are considered within the AM Plan for this service area. The two indicators are the:

- Asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years); and,
- Medium-term forecast costs/proposed budget (over 10 years of the planning period).

#### ASSET RENEWAL FUNDING RATIO

Asset Renewal Funding Ratio<sup>19</sup> **42%**

The Asset Renewal Funding Ratio is used to determine if the City is accommodating asset renewals in an **optimal** and **cost-effective** manner from a timing perspective and relative to financial constraints, the risk the City is prepared to accept and targeted service levels it wishes to maintain. The target renewal funding ratio should be ideally between **90% - 110%** over the entire planning period. A low indicator result generally indicates that service levels are achievable, however, the expenditures are below this level in some service areas predominantly

<sup>19</sup> AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

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due to underinvestment, including a lack of permanent infrastructure funding from senior levels of government, as well as large spikes of growth throughout the years.

If assets are not renewed at the appropriate timing, it will inevitably require difficult trade-off choices that could include:

- A reduction of the level of service and availability of assets;
- Increased complaints and reduced customer satisfaction;
- Increased reactive maintenance and renewal costs; and,
- Damage to the City's reputation and risk of fines or legal costs.

The lack of renewal resources will be addressed in future AM Plans while aligning the plan to the LTFF. This will allow staff to develop options and long-term strategies to address the renewal rate. The City will review its renewal allocations once the entire inventory has been confirmed and amalgamated.

The Asset Renewal Funding Ratio (ARFR) is calculated for only the first 10 years of the planning term. In CFEM's case, their renewals in this period consist of IT hardware, maintenance equipment, vehicles, and fleet equipment utilized in maintaining the Tim Horton's Field stadium and field of play. While the ARFR is currently below the optimally funded range (90-100%), the average annual gap in funding in absolute dollars is approximately \$132K per year. This includes a backlog of renewals identified at a value of \$835K. In relation to the overall budgets identified for the group, these values are less substantial in size by comparison. Additionally, it should be noted that several of the expected service lives of these equipment renewals are estimates and will require inspection prior to making the decision to expense a replacement. This speaks to the value in updating and maintaining an accurate inventory of asset data, in order to present reliable forecasts in funding requirements.

## MEDIUM-TERM – 10 YEAR FINANCIAL PLANNING PERIOD

### 10-Year Operations, Maintenance and Renewal Financial Ratio 84%

Although this AM Plan includes forecast projections to 30 years, the higher confidence numbers are typically within the first ten years of the lifecycle forecast. The 10-year Operations, Maintenance and Renewal Financial Ratio compares the Planned Budget with the Lifecycle Forecast for the optimal operation, maintenance, and renewal of assets to provide an agreed level of service over the next 10-year period. Similarly, to the AARF, the optimal ratio is also between **90-110%**. A low ratio would indicate that assets are not being funded at the rate that would meet the organization's risk and service level commitments.

The forecast operations, maintenance and renewal costs over the 10-year planning period is **\$28.9M** on average per year. Over time as improved information becomes available, it is anticipated to see this number change. The proposed (budget) operations, maintenance and renewal funding is **\$24.3M** on average per year giving a 10-year funding shortfall of **\$4.6M** per year or **\$46M** over the 10-year planning period. This indicates that **84%** of the forecast costs needed to provide the services documented in this AM Plan are accommodated in the proposed

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

budget, which is not within the 90-110% range. While this value falls short of the optimal funding targets, it is within range of the ideal value. Financial shortcomings identified in the lifecycle modelling exercise indicate that both a backlog of and anticipated need for major maintenance projects are primarily driving the gap. Specifically, there are high-cost system replacements required for the Tim Horton's Field facility that are not currently captured with a secured budget which has an impact on the ratio. Note, that these calculations **exclude** acquired assets. It should also be noted that the CFEM group supports closing the funding gap across all divisions, which has been quantified respective to each AM Plan. Accurately quantifying this funding gap for all facilities across the city has been noted as a continuous improvement item in Section 10.

Funding an annual funding shortfall or funding 'gap' should not be addressed immediately. The overall gap in funding city-wide will require vetting, planning and resources to begin to incorporate gap management into the future budgets for all City services. This gap will need to be managed over time to reduce it in a sustainable manner and limit financial shock to customers. Options for managing the gap include:

- Financing strategies – increased funding, block funding for specific lifecycle activities, long-term debt utilization;
- Adjustments to lifecycle activities – increase/decrease maintenance or operations, increase/decrease frequency of renewals, limit acquisitions or dispose of underutilized assets; and,
- Influence level of service expectations or demand drivers.

These options and others will allow Hamilton to ensure the gap is managed appropriately and ensure the level of service outcomes the customers desire.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to eventually achieve a financial indicator of **90-110%** for the first years of the AM Plan and ideally over the 10-year life of the Long-Term Financial Plan.

## 9.2 FORECAST COSTS (OUTLAYS) FOR THE LONG-TERM FINANCIAL PLAN

**Table 28** shows the forecast costs (outlays) required for consideration in the 30-year long-term financial plan.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the operational and capital budget. The City will begin developing its long-term financial plan (LTFP) to incorporate both the operational and capital budget information and help align the LTFP to the AM Plan which is critical for effective asset management planning.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the AM Plan (including possibly revising the long-term financial plan).

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

The City will manage the 'gap' by continuing to develop this AM Plan to provide guidance on future service levels and resources required to provide these services in consultation with the community. Options to manage the gap include reduction and closure of low-use assets, increased funding allocations, reduce the expected level of service, utilize debt-based funding over the long term, adjustments to lifecycle activities, improved renewals and multiple other options or combinations of options.

**Table 28: Forecast Costs for the Long-Term Financial Plan**

YEAR	ACQUISITION	OPERATION	MAINTENANCE	RENEWAL	DISPOSAL
2024	\$-	\$22,244,066	\$17,390,694	\$906,630	\$-
2025	\$-	\$22,306,182	\$5,583,103	\$71,689	\$-
2026	\$-	\$22,557,412	\$2,562,302	\$38,272	\$-
2027	\$-	\$22,775,968	\$2,187,838	\$44,804	\$-
2028	\$-	\$22,375,968	\$3,404,100	\$112,044	\$-
2029	\$-	\$22,375,968	\$5,306,602	\$151,556	\$-
2030	\$-	\$22,375,968	\$18,009,668	\$212,272	\$-
2031	\$-	\$22,375,968	\$4,132,290	\$94,689	\$-
2032	\$-	\$22,375,968	\$2,163,319	\$641,628	\$-
2033	\$-	\$22,375,968	\$1,641,705	\$14,420	\$-
2034	\$-	\$22,413,944	\$2,649,955	\$258,139	\$-
2035	\$-	\$22,413,944	\$1,725,705	\$31,689	\$-
2036	\$-	\$22,413,944	\$1,725,705	\$92,735,952	\$-
2037	\$-	\$22,413,944	\$1,725,705	\$54,804	\$-
2038	\$-	\$22,413,944	\$1,725,705	\$4,310,484	\$-
2039	\$-	\$22,413,944	\$1,725,705	\$317,806	\$-
2040	\$-	\$22,413,944	\$1,725,705	\$660,513	\$-
2041	\$-	\$22,413,944	\$1,725,705	\$19,689	\$-
2042	\$-	\$22,413,944	\$1,725,705	\$169,387	\$-

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

YEAR	ACQUISITION	OPERATION	MAINTENANCE	RENEWAL	DISPOSAL
2043	\$-	\$22,413,944	\$1,725,705	\$34,420	\$-
2044	\$-	\$22,413,944	\$1,863,705	\$275,380	\$-
2045	\$-	\$22,413,944	\$1,725,705	\$45,823,932	\$-
2046	\$-	\$22,413,944	\$1,725,705	\$113,272	\$-
2047	\$-	\$22,413,944	\$1,725,705	\$14,804	\$-
2048	\$-	\$22,413,944	\$1,725,705	\$567,044	\$-
2049	\$-	\$22,413,944	\$1,725,705	\$8,556,125	\$-
2050	\$-	\$22,413,944	\$1,725,705	\$168,272	\$-
2051	\$-	\$22,413,944	\$1,725,705	\$29,689	\$-
2052	\$-	\$22,413,944	\$1,725,705	\$166,628	\$-
2053	\$-	\$22,413,944	\$1,725,705	\$14,420	\$-

## 9.3 FUNDING STRATEGY

The proposed funding for assets is outlined in the City's operational budget and 10-year capital budget.

These operational and capital budgets determine how funding will be provided, whereas the AM Plan typically communicates how and when this will be spent, along with the service and risk consequences. Future iterations of the AM Plan will provide service delivery options and alternatives to optimize limited financial resources.

## 9.4 VALUATION FORECASTS

Asset values are forecast to increase as additional assets are added into service. As projections improve and can be validated with market pricing, the net valuations will likely increase significantly despite some assets being programmed for disposal that will be removed from the register over the 30-year planning horizon.

Additional assets will add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts. Any disposals of assets would decrease the operations and maintenance needs in the longer term and remove the high costs of renewal obligations. At this

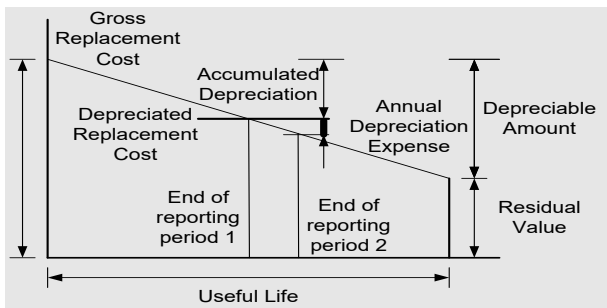
# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

time, it is not possible to separate the disposal costs from the renewal or maintenance costs however this will be improved for the next iteration of the plan.

## 9.5 ASSET VALUATION

The best available estimate of the value of assets included in this AM Plan are shown below. The assets are valued at estimated replacement costs:

<b>Replacement Cost (Current/Gross)</b>	<b>\$908,473,017</b>
<b>Depreciable Amount</b>	<b>\$908,465,889</b>
<b>Depreciated Replacement Cost<sup>20</sup></b>	<b>\$624,614,656</b>
<b>Depreciation</b>	<b>\$12,488,587</b>



## 9.6 KEY ASSUMPTIONS MADE IN FINANCIAL FORECASTS

In compiling this AM Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AM Plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this AM Plan are:

- Operational forecasts are based on current budget allocations and are the basis for the projections for the 30-year horizon and do not address other operational needs not yet identified;
- Maintenance forecasts are based on current budget allocations and do not identify asset needs at this time. It is solely based on planned activities; and,
- Replacement costs were based on historical costing. They were also made without determining what the asset would be replaced with in the future.

<sup>20</sup> Also reported as Written Down Value, Carrying or Net Book Value.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 9.7 FORECAST RELIABILITY AND CONFIDENCE

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is defined in the **AM Plan Overview**.

The estimated confidence level for and reliability of data used in this AM Plan is considered to be a **Low-Medium** confidence level using the information in **Table 29**.

**Table 29: Data Confidence Assessment for Data Used in AM Plan**

DATA	CONFIDENCE ASSESSMENT	COMMENT
<b>Demand Drivers</b>	Very Low	Further investigation is required to quantify demands, this has not been included.
<b>Growth Projections</b>	Very Low	Further investigation is required to quantify growth, this has not been included.
<b>Acquisition Forecast</b>	Very Low	There is no clear acquisition forecast, this has not been included.
<b>Operation Forecast</b>	Medium	First 4 years are accurate, remaining years are uncertain.
<b>Maintenance Forecast</b>	Medium	Forecasted numbers driven from BCA reporting data.
<b>Renewal Forecast - Asset Value</b>	Low	Most assets are based on recent market value.
<b>Renewal Forecast - Asset Useful Life</b>	Medium	Assets are not always replaced per their renewal schedule, more review required.
<b>Renewal Forecast - Condition Modelling</b>	Low	Many assets are replaced according to a renewal schedule, do not have conditions assigned and are often based on age.
<b>Disposal forecast</b>	Very Low	There is no clear disposal forecast, this has not been included.

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 10. PLAN IMPROVEMENT AND MONITORING

### 10.1 STATUS OF ASSET MANAGEMENT PRACTICES

#### ACCOUNTING AND FINANCIAL DATA SOURCES

This AM Plan utilizes accounting and financial data. The sources of the data are:

- 2023 Approved Operating Budget;
- 2023-2026 Multi-Year Operating Forecast;
- 2023 Approved Corporate Facilities and Energy Management Capital Budget;
- Building Condition Assessment Reports;
- Asset Management Data Collection Templates;
- Audited Financial Statements and Government Reporting (FIR, TCA etc.);
- Financial Exports from internal financial systems; and,
- Historical cost and estimates of budget allocation based on SME experience.

#### ASSET MANAGEMENT DATA SOURCES

This AM Plan also utilizes asset management data. The sources of the data are:

- Data extracts from various city applications and management software;
- Asset Management Data Collection Templates;
- Tender documents, subdivision agreements and projected growth forecasts as well as internal reports;
- Condition assessments;
- Subject matter Expert Opinion and Anecdotal Information; and,
- Reports from the mandatory inspections, operational and maintenance activities internal reports.

### 10.2 IMPROVEMENT PLAN

It is important that the City recognize areas of the AM Plan and planning processes that require future improvements to ensure both effective asset management and informed decision-making. The tasks listed below are essential to improving the AM Plan and the City's ability to make evidence-based and informed decisions. These improvements span from improved lifecycle activities, improved financial planning and to plans to physically improve the assets.

The Improvement Plan **Table 30** below highlights proposed improvement items that will require further discussion and analysis to determine feasibility, resource requirements and alignment to current work plans. Future iterations of this AM Plan will provide updates on these improvement plans.



# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

**Table 30: Improvement Plan**

#	TASK	RESPONSIBILITY	RESOURCES REQUIRED	TIMELINE
1	Enhance the asset inventory database. Improve on condition evaluation methodologies, capturing of data, consistency in reporting, etc.	CFEM	Internal and external resources	2024-2025
2	Develop a framework for calibrating facility ESLs	CAM/CFEM	Internal Resources	Ongoing
3	Gather technical levels of service measurements that are not currently being measured.	CFEM	Internal Resources	Ongoing
4	Quantify costs of demand management and risk adaptation plans.	CAM	Internal Resources	Ongoing
5	Investigate asset costs for future climate change mitigation and adaptation targets	CAM/CFEM	Internal and external resources	Ongoing
6	Review and categorize the full facility asset list, aligning asset ownership and responsibilities across divisions (specifically noted for civic properties).	CAM/CFEM	Internal and external resources	2024-2025
7	Aligning overall budgets, refining methodology, and further leveraging BCA data and reports.	CAM/CFEM	Internal Resources	2027
8	Meet the target of 100% to review and complete building condition assessments.	CAM/CFEM	Internal and external resources	2025-2028
9	Rework public survey, improve volume of engagement, create an internal survey	CAM/CFEM	Internal Resources	Ongoing
10	Incorporate more whole life costs into LC Model	CAM/CFEM	Internal Resources	Ongoing

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

#	TASK	RESPONSIBILITY	RESOURCES REQUIRED	TIMELINE
11	Improve the accommodations and inclusivity implementation into future AM Plan iterations	CAM	Internal Resources	Ongoing
12	Increased collaboration between facilities and each division's AM Plan development/updates	CAM/CFEM	Internal Resources	Ongoing
13	Integrating EAM into AM Plan	CAM/CFEM	Internal and external resources	Ongoing
14	Quantify total backlog of maintenance costs for all city facilities	CAM/CFEM	Internal Resources	2027
15	Review existing internal asset condition assessments and ensure they are revised to report on 5-point scale with equivalent descriptions	CAM/CFEM	Internal Resources	2027
16	Climate Lens tool to be used to assess projects and prioritize climate adaptation projects.	CFEM	Internal and external resources	2027
17	Quantify operational contract budgets to track technical performance measures	CFEM	Internal and external resources	2024
18	Build a more concrete capital works forecast. Develop reserve fund for emergency breakdown and equipment replacement needs.	CFEM	Internal and external resources	2027
19	Quantify costs for intangible assets	CAM/CFEM	Internal Resources	2027

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

## 10.3 MONITORING AND REVIEW PROCEDURES

This AM Plan will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The AM Plan will be reviewed and updated on a regular basis to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budget will be incorporated into the Long-Term Financial Plan once completed.

## 10.4 PERFORMANCE MEASURES

The effectiveness of this AM Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in this AM Plan are incorporated into the long-term financial plan;
- The degree to which the one to ten-year detailed works programs, budgets, business plans and corporate structures consider the 'global' works program trends provided by the AM Plan;
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans; and,
- The Asset Renewal Funding Ratio achieving the Organizational target (this target is often 90 – 110%).

# CORPORATE FACILITIES AND ENERGY MANAGEMENT - 2024 ASSET MANAGEMENT PLAN

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# CORPORATE FACILITIES 2024 ASSET MANAGEMENT PLAN

## 12. APPENDIX "A" – SURVEY ANALYSIS



Corporate and Public Facilities

Survey Period: January 8th - February 5th, 2024

February 2024

<b>86</b> Respondents	<b>32</b> Survey Questions	<b>5</b> Demographic Questions	<b>2191</b> Survey Responses	<b>393</b> Demographic Responses
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Age	% Pop. by Age	% of Respondents	Respondents
18 to 34	22.1%	20.9%	18
35 to 64	41.7%	58.1%	50
65+	19.5%	12.8%	11

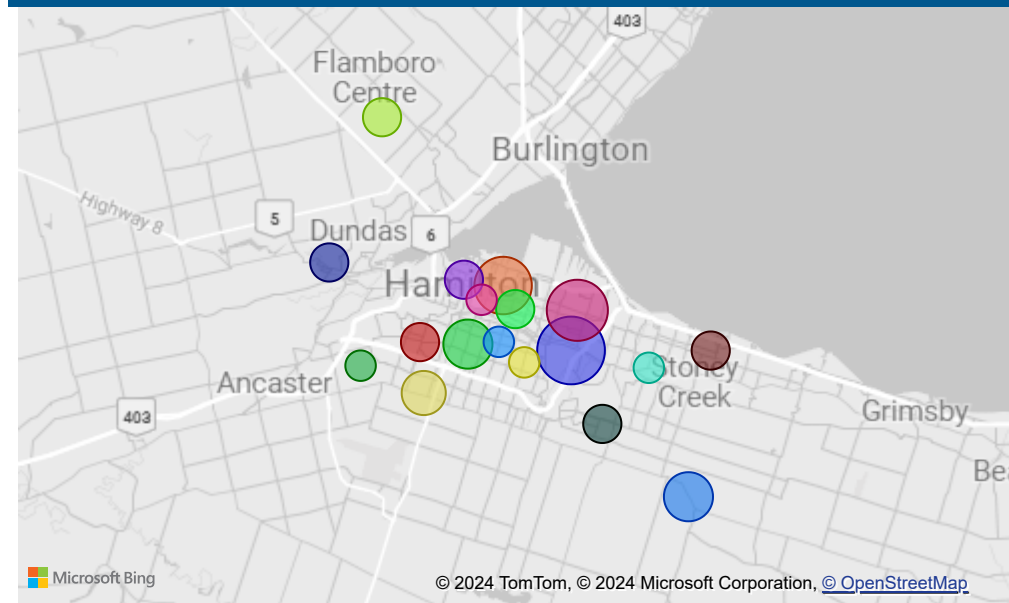
Residency	% of Respondents	Respondents
Owned by you or a member of your household	74.4%	64
Other	12.8%	11
Rented by you or a member of your household	12.8%	11

Region	% Pop. by Region	Population	% of Respondents	Respondents
Lower	45.6%	432,375	37.2%	32
Upper	37.3%	353,485	16.3%	14
Rural	17.1%	161,840	7.0%	6

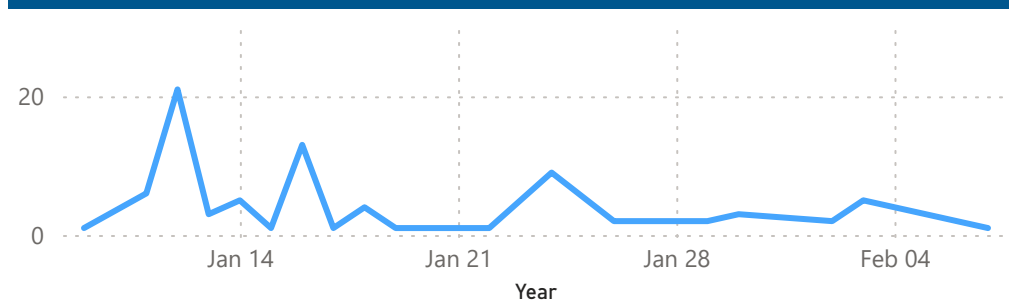
Identity	% of Respondents	Respondents
No	60.5%	52
Yes	22.1%	19
I would prefer not to answer	10.5%	9
Other	8.1%	7
Can't say	3.5%	3

These stats will add to over 100% because the survey allowed responders to choose multiple options for each of the questions

## Respondent Density Map



## Respondents By Day



Responses Respondents

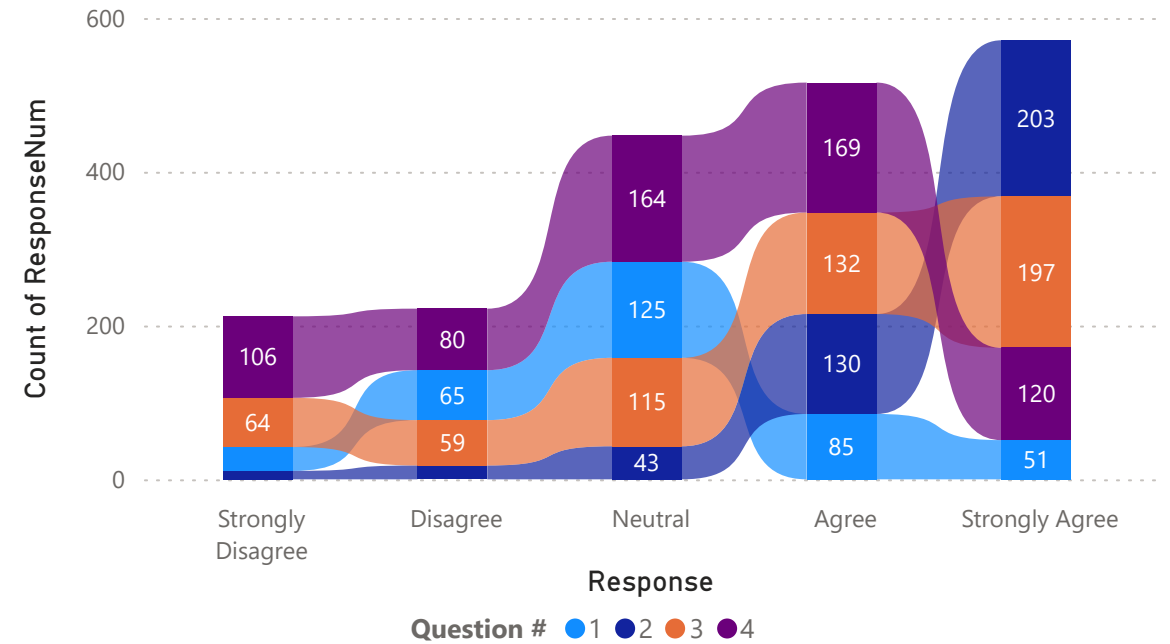
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# Summary of Survey Results

● Didn't Answer ● Can't Say ● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree



Questions	σ	Avg.	Opt Out	Opt Out %
<b>All Questions</b>	<b>1.30</b>	<b>3.51</b>	<b>268</b>	<b>11.99%</b>
Q2 Importance of services	0.99	4.22	25	5.81%
Q3 Recommendation to Others	1.35	3.60	121	17.59%
Q4 Experience with services	1.33	3.18	49	7.12%
Q1 Performance of services	1.14	3.17	73	16.98%



Respondents who did not answer or selected 'Can't Say' are included in opt out.



Responses      Respondents

1968

86

## Survey Question Summary

Question #	Survey Question	n (Sample Size)	$\sigma$ (Consistency)	Margin of Error (Confidence Level $\pm$ )
1	How do you feel the City has performed over the last 2 years with respect to the City's Corporate and Public Facilities?	51	1.14	14%
2	How would you rate the importance of the following, with respect to the City's Corporate and Public Facilities?	58	0.99	13%
3	How likely would you be to recommend the use of these Corporate and Public Facilities?	81	1.35	11%
4	Based on your experience with the City of Hamilton's Corporate and Public Facilities over the last 2 years, do you agree with the following statements?	91	1.33	10%

Question

# Performance of services

1

*How do you feel the City has performed over the last 2 years with respect to the City's Corporate and Public Facilities?*

Responses

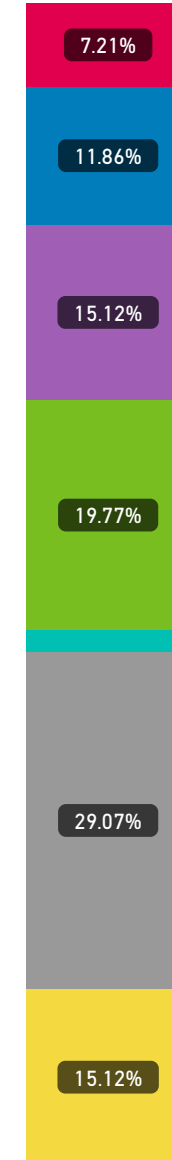
357

Respondents

82

Service Area	Very poor	Poor	Average	Good	Very good
<b>Total</b>	<b>31</b>	<b>65</b>	<b>125</b>	<b>85</b>	<b>51</b>
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning {HVAC})	8	12	24	24	8
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	7	20	19	7	5
Inclusive and welcoming (Examples: Diverse and safe)	6	6	26	18	14
Location (Example: Nearby)	5	15	31	16	11
Physical access (Examples: Ramps, snow-clearing, entryways)	5	12	25	20	13

Service Area	σ	Avg.	Opt Out	Opt Out %
<b>Total</b>	<b>1.14</b>	<b>3.17</b>	<b>73</b>	<b>17.0%</b>
Inclusive and welcoming (Examples: Diverse and safe)	1.15	3.40	16	18.6%
Physical access (Examples: Ramps, snow-clearing, entryways)	1.13	3.32	11	12.8%
Location (Example: Nearby)	1.09	3.17	8	9.3%
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning {HVAC})	1.14	3.16	10	11.6%
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	1.10	2.71	28	32.6%



- Can't Say
- Average
- Did not answer
- Good
- Poor
- Very good
- Very poor

Respondents who did not answer or selected 'Can't Say' are included in opt out.



Question

2

## Importance of services

How would you rate the importance of the following, with respect to the City's Corporate and Public Facilities?

Responses

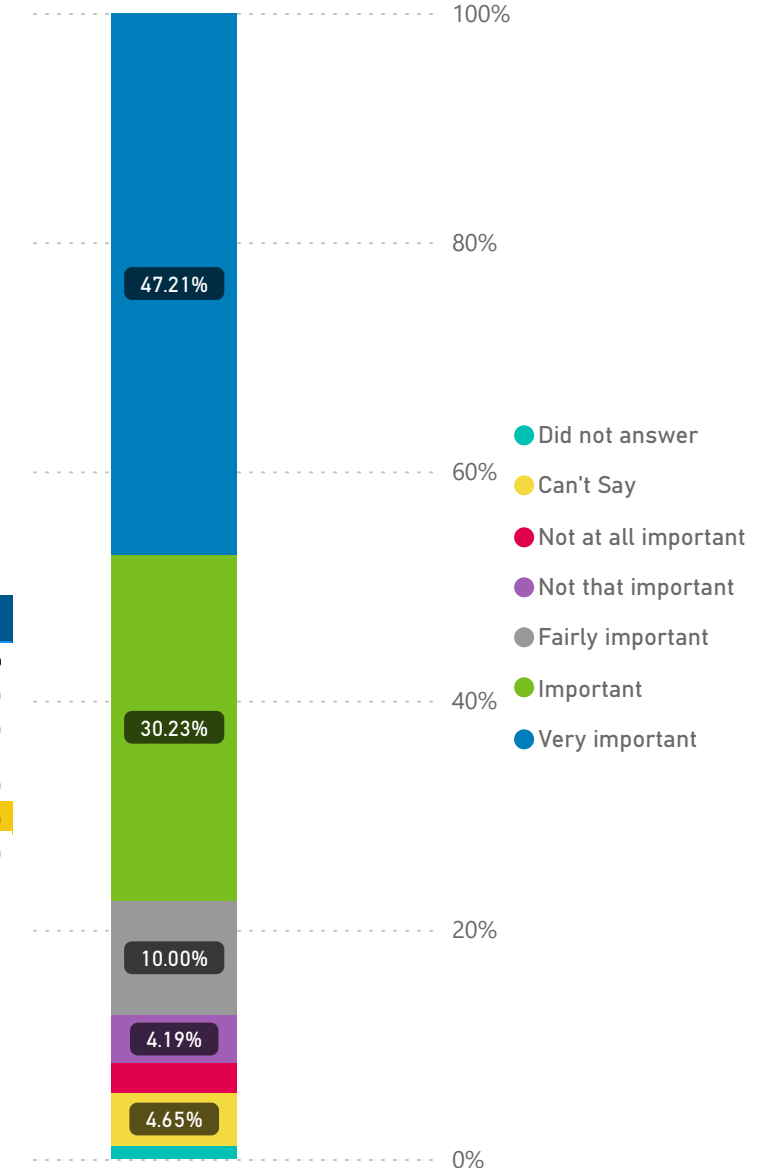
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Respondents

84

Service Area	Not at all important	Not that important	Fairly important	Important	Very important
<b>Total</b>	<b>11</b>	<b>18</b>	<b>43</b>	<b>130</b>	<b>203</b>
Physical access (Examples: Ramps, snow-clearing, entryways)			4	19	58
Location (Example: Nearby)	1	2	9	35	35
Inclusive and welcoming (Examples: Diverse and safe)	4	4	8	28	35
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	6	12	14	24	25
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning {HVAC})			8	24	50

Service Area	$\sigma$	Avg.	Opt Out	Opt Out %
<b>Total</b>	<b>0.99</b>	<b>4.22</b>	<b>25</b>	<b>5.8%</b>
Physical access (Examples: Ramps, snow-clearing, entryways)	0.57	4.67	5	5.8%
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning {HVAC})	0.67	4.51	4	4.7%
Location (Example: Nearby)	0.83	4.23	4	4.7%
Inclusive and welcoming (Examples: Diverse and safe)	1.09	4.09	7	8.1%
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	1.26	3.62	5	5.8%



Respondents who opted out by not answering or selecting 'Can't Say' are included in opt out.

## Differential of Importance and Performance

*Service areas where importance exceeds performance by 20 points is indicative of a mismatch between expectations and service levels, equal to one point on the Likert scale used.*

Responses

762

Respondents

50

Service Area	Performance (index score)	Importance (index score)	Net Differential	Opt Out %
<b>Total</b>	<b>63</b>	<b>84</b>	<b>-21</b>	<b>11%</b>
Physical access (Examples: Ramps, snow-clearing, entryways)	66	93	-27	9%
Clean and in good repair (Examples: Condition, cleanliness, air quality, Heating, Ventilation and Air Conditioning {HVAC})	63	90	-27	8%
Location (Example: Nearby)	63	85	-21	7%
Inclusive and welcoming (Examples: Diverse and safe)	68	82	-14	13%
Environmentally conscious (Examples: Climate goals, Net-Zero, energy efficient)	54	72	-18	19%

Performance

*Q1 How do you feel the City has performed over the last 2 years with respect to the City's Corporate and Public Facilities?*

Importance

*Q2 How would you rate the importance of the following, with respect to the City's Corporate and Public Facilities?*



The Net Differential is calculated here by taking the average Likert score for each service area and multiplied by 20, the difference between performance and importance is then calculated as our final product. Negative differential indicates a higher perceived level of importance vs performance and positive is the opposite.

Question

3

# Recommendation to Others

*How likely would you be to recommend the use of these Corporate and Public Facilities?*

Responses

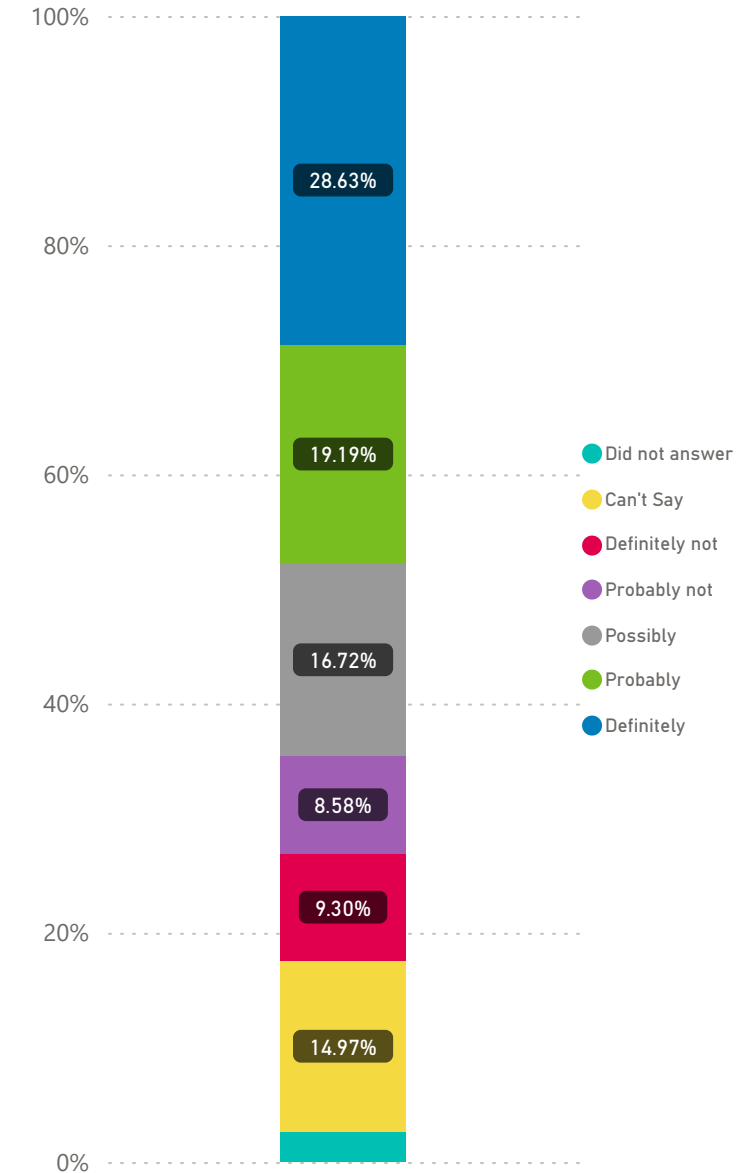
567

Respondents

82

Service Area	Definitely not	Probably not	Possibly	Probably	Definitely
<b>Total</b>	<b>64</b>	<b>59</b>	<b>115</b>	<b>132</b>	<b>197</b>
Public Health facilities	9	9	17	9	17
Park facilities	9	10	12	18	31
Museums	6	3	14	23	26
Municipal Service Centres/Town Halls	6	8	20	18	18
Long-term care homes	15	15	11	7	8
Hamilton Public Libraries	4	5	7	22	41
Gage Park Greenhouse	6	1	10	17	42
City Hall	9	8	24	18	14

Service Area	σ	Avg.	Opt Out	Opt Out %
<b>Total</b>	<b>1.35</b>	<b>3.60</b>	<b>121</b>	<b>17.6%</b>
Gage Park Greenhouse	1.19	4.16	10	11.6%
Hamilton Public Libraries	1.14	4.15	7	8.1%
Museums	1.20	3.83	14	16.3%
Park facilities	1.39	3.65	6	7.0%
Municipal Service Centres/Town Halls	1.23	3.49	16	18.6%
City Hall	1.24	3.27	13	15.1%
Public Health facilities	1.39	3.26	25	29.1%
Long-term care homes	1.37	2.61	30	34.9%



Respondents who opted out by not answering or selecting 'Can't Say' are included in opt out.



Question

3

# Net Promoter Score

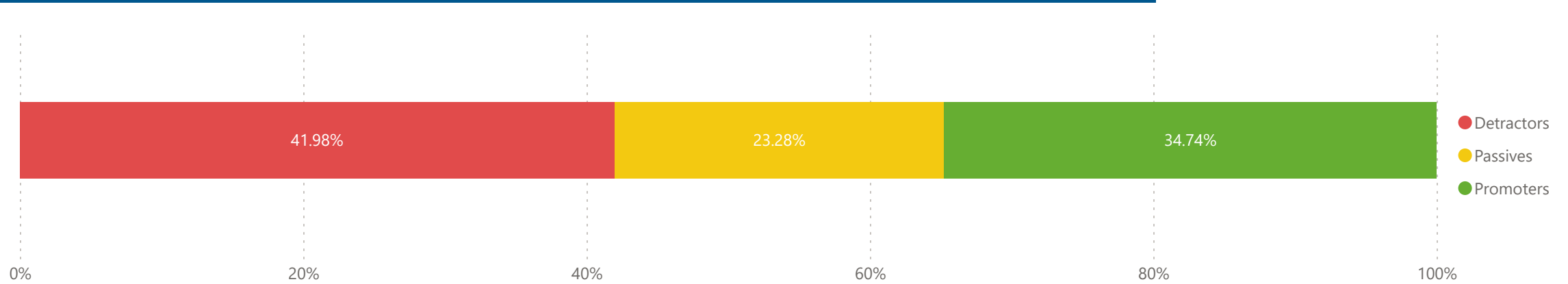
*How likely would you be to recommend the use of these Corporate and Public Facilities?*

Responses

567

Respondents

82



Service Area	$\sigma$	NPS	Detractors	Passives	Promoter
<b>All Service Areas</b>	<b>1.35</b>	<b>-7</b>	<b>238</b>	<b>132</b>	<b>197</b>
Gage Park Greenhouse	1.19	33	17	17	42
Hamilton Public Libraries	1.14	32	16	22	41
Museums	1.20	4	23	23	26
Park facilities	1.39	0	31	18	31
Municipal Service Centres/Town Halls	1.23	-23	34	18	18
Public Health facilities	1.39	-30	35	9	17
City Hall	1.24	-37	41	18	14
Long-term care homes	1.37	-59	41	7	8

Typically the Net Promoter Score is used to measure customer loyalty.



Likert choices less than 4 are considered 'Detractors' while 5s are considered 'Promoters' and 4s are 'Passive'. Respondents who opted out by not answering or selecting 'Can't Say' were removed from the sample. Net Promoter score is calculated by subtracting (% Detractors) from (% Promoters).  $\sigma$  (Standard Deviation) is calculated in percent, the same units as the Net Promoter Score.

Question

4

# Experience with services

Based on your experience with the City of Hamilton's Corporate and Public Facilities over the last 2 years, do you agree with the following statements?

Responses

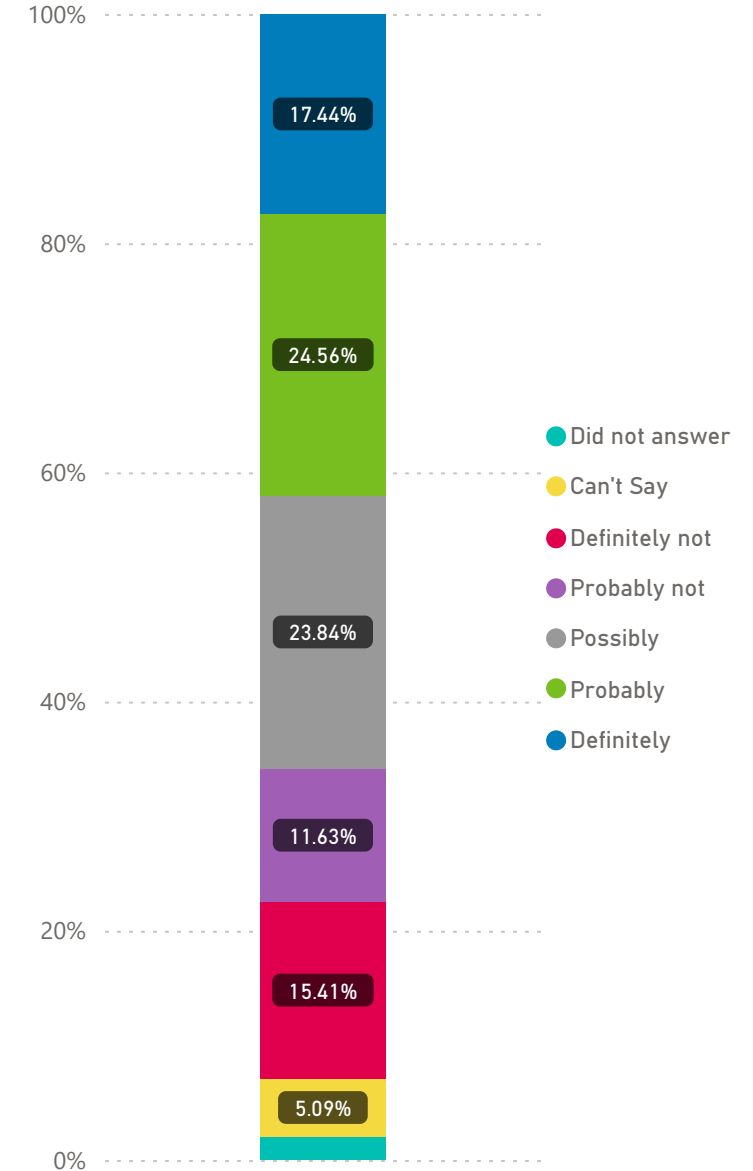
639

Respondents

84

Service Area	Definitely not	Probably not	Possibly	Probably	Definitely
<b>Total</b>	<b>106</b>	<b>80</b>	<b>164</b>	<b>169</b>	<b>120</b>
Washrooms in Hamilton's public facilities are well-maintained and clean	15	11	17	21	13
Walkways to Hamilton's public facilities are free of snow and debris	8	14	22	23	15
The grassy areas and landscaping around Hamilton's public facilities are well-maintained and regularly cut	8	5	20	24	21
I would be willing to increase taxation to provide better public facilities	33	12	15	5	15
I can find an empty garbage receptacle when I need one around Hamilton's facilities	15	10	24	17	13
Hamilton's public facilities provide good value for the City	11	7	19	26	17
Hamilton's public facilities meet my needs	9	13	26	22	12
Hamilton's public facilities are comfortable, with appropriate levels of light and noise	7	8	21	31	14

Service Area	σ	Avg.	Opt Out	Opt Out %
<b>Total</b>	<b>1.33</b>	<b>3.18</b>	<b>49</b>	<b>7.1%</b>
The grassy areas and landscaping around Hamilton's public facilities are well-maintained and regularly cut	1.24	3.58	8	9.3%
Hamilton's public facilities are comfortable, with appropriate levels of light and noise	1.14	3.46	5	5.8%
Hamilton's public facilities provide good value for the City	1.29	3.39	6	7.0%
Walkways to Hamilton's public facilities are free of snow and debris	1.22	3.28	4	4.7%
Hamilton's public facilities meet my needs	1.19	3.18	4	4.7%
Washrooms in Hamilton's public facilities are well-maintained and clean	1.37	3.08	9	10.5%
I can find an empty garbage receptacle when I need one around Hamilton's facilities	1.33	3.04	7	8.1%
I would be willing to increase taxation to provide better public facilities	1.52	2.46	6	7.0%



Respondents who did not answer or selected 'Can't Say' are included in opt out.







## Definition and Ranking of Consistency and Confidence

# Data Grading Scales

Grade	Data Consistency Standard Deviation ( $\sigma$ , Consistency of Responses)	Confidence Level Margin of Error (at 95% Confidence in Sample Size)
A Very High	0 to 0.5 - results are tightly grouped with little to no variance in response	0% to 5% - Minimal to no error in results, can generally be interpreted as is
B High	0.5 to 1.0 - results are fairly tightly grouped but with slightly more variance in response	5% to 10% - Error has become noticeable, but results are still trustworthy
C Medium	1.0 to 1.5 - results are moderately grouped together, but most respondents are generally in agreement	10% to 20% - Error is a significant amount and will cause uncertainty in final results
D Low	1.5 to 2.0 - results show a high variance with a fair amount of disparity in responses	20% to 30% - Error has reached a detrimental level and results are difficult to trust
E Very Low	2.0+ - results are highly variant with little to no grouping	30%+ - Significant error in results, hard to interpret data in much of a meaningful way

$$\text{Margin of Error} = \frac{0.98}{\sqrt{n}}$$

Here we attribute a lower value of consistency of response (Standard Deviation) to a higher confidence grade, but it does not necessarily mean that the data is "better". In reality we receive more insight in the data regardless. With a high consistency we can tell that respondents more often come to the same conclusion on a response for a question, whereas with low consistency we would see a split in people's opinion, some with a very high rating and others with a very low rating. Knowing this and then understanding why is the most important aspect.

The margin of error is calculated using the factor n (sample size). The margin of error mainly tells us whether the sample size of the survey is appropriate. This is because in the calculation above, sample size is the only factor and thus has the biggest impact. The margin of error is represented as a percentage and indicates the range above and below the calculated average the true value is likely to fall. A smaller margin of error indicates a more precise estimate and vice versa.