City of Kingston

2024 Asset Management Plan

Executive Summary and Introduction	Volume 1 Infrastructure, Transportation, Transit, & Emergency Services	**Volume 2 Corporate Services & Parking Operations**	Volume 3 Community Services	Volume 4 Parks, Parkland, & Trails	Volume 5 Police, Libraries, City Real Estate & Environment

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Appendices (Provided in a Separate Document)

Acronyms

Acronym	Definition
AMP	Asset Management Plan
BCA	Building Condition Assessment
EUL	Expected Useful Life
GHG	Greenhouse Gas
IS&T	Information Systems & Technology
IT	Information Technology
KFPL	Kingston Frontenac Public Library
KM	Kilometre
LOS	Levels of Service
PDU	Power Distribution Unit
SOLI	State of the Local Infrastructure
UK	Utilities Kingston
UPS	Uninterruptible Power Supply

1.0 Overview

The asset management project includes 21 service areas, covering all assets owned by the City of Kingston (City) that are not already included in other Asset Management Plans (AMP). This is the first iteration of an AMP for these service areas. Given the extensive range of assets included in the project, the plan is presented in the following six documents:

- Executive Summary and Introduction
- Volume 1: Infrastructure, Transportation, Transit, & Emergency Services
- Volume 2: Corporate Services & Parking Operations
- Volume 3: Community Services
- Volume 4: Parks, Parkland, & Trails
- Volume 5: Police, Libraries, City Real Estate & Environment

Overview

The Introduction document presents key asset management principles and an overview of how each service area will be presented in its own chapter with the following sections: State of the Local Infrastructure (SOLI); Levels of Service (LOS); Risk Assessment; and Asset Management Strategy. The Introduction also includes a section on Growth and a Roadmap with Next Steps. The following sections are included in the Introduction document:

- Section 1.1 Asset Management
- Section 1.2 Scope of Assets
- Section 1.3 Alignment with Strategic Plan, Policy, and Regulation
- Section 1.4 Governance and Relationship to Other Planning Documents
- Section 1.5 Growth
- Section 1.6 Overview of the AMP
    - State of the Local Infrastructure
    - Levels of Service
    - Risk Assessment
    - Asset Management Strategy
- Section 1.7 Roadmap with Next Steps

1.1 Scope of Assets in Volume 2

The service areas included in **Volume 2: Corporate Services & Parking Operations** are: Corporate Fleet; Information Systems and Technology (IS&T); and Parking Equipment, Lots and Structures. See **Table 1-1** for the respective asset classes for each service area and the relevant chapter.

Table 1-1: Service Areas included in Corporate Services & Parking Operations

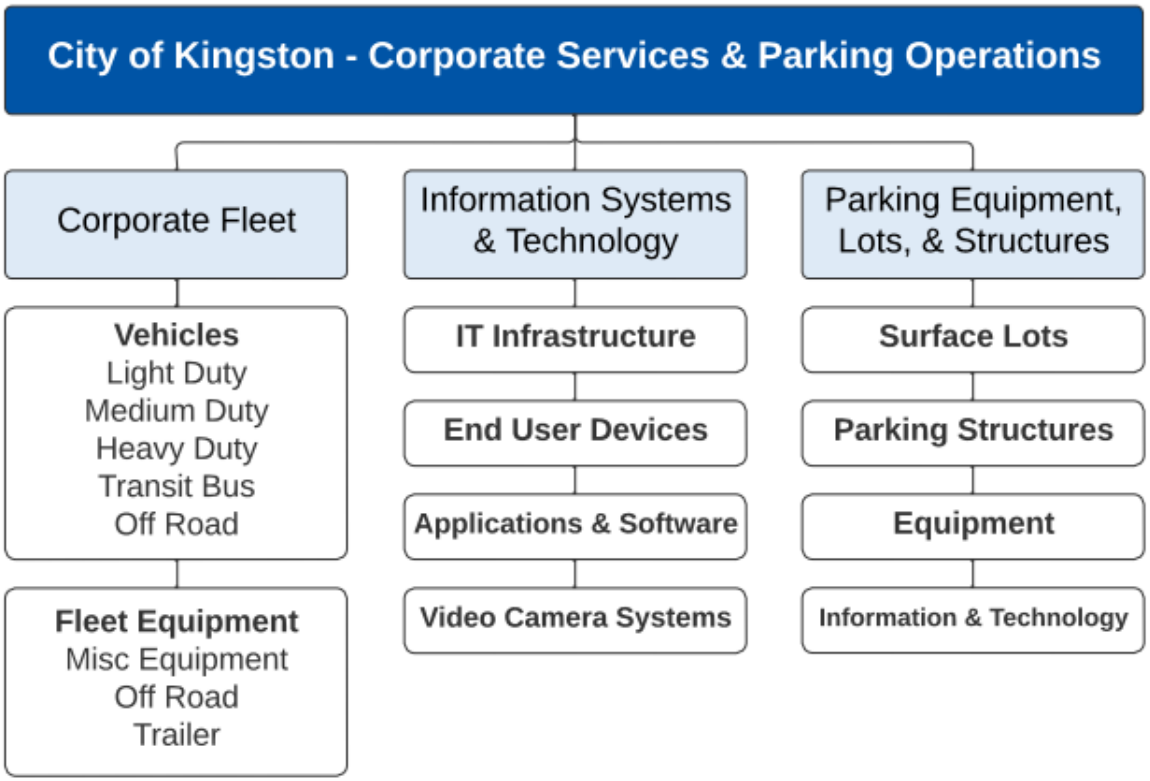
Service Area	Asset Classes	Report Chapter
Corporate Fleet	• Vehicles • Fleet Equipment	Chapter 2.0
Information Systems & Technology (IS&T)	• IT Infrastructure • End User Devices • Applications & Software • Video Camera Systems	Chapter 3.0
Parking Equipment, Lots, & Structures	• Surface Lots • Parking Structures • Equipment • Information & Technology	Chapter 4.0

Note: Condition assessments are not included for the assets in Applications & Software (IS&T) as these are not physical assets. Additionally, at the time of writing this AMP there was no data available for the following asset classes: Video Camera Systems (IS&T); and Information & Technology (Parking Equipment, Lots, & Structures).

1.2 Asset Hierarchy

The asset hierarchy that was generated and used for the City's assets is shown in **Figure 1-1**. The asset group (level 1) is shown in the blue box, the three service areas (level 2) are shown in the light blue boxes, the asset classes are shown in bold (level 3), and where applicable, the asset sub-classes are shown in regular text (level 4).

Figure 1-1: Asset Hierarchy for Corporate Services & Parking Operations



1.3 Asset Inventory and Replacement Costs

An asset inventory was generated for all assets included in this AMP using Microsoft Excel. The inventory organizes assets using the various levels of the asset hierarchy and acts as a central repository for the asset data that can be used to inform asset management planning. It is recommended that the City continually updates the asset information stored within the asset inventory to facilitate asset management planning based on reliable data.

Where replacement costs were provided, the values were inflated based on the Bank of Canada Consumer Price Index (CPI) to estimate the replacement cost in 2023 dollars. If replacement costs were not provided, Dillon leveraged a unit cost model to assign replacement costs based on unit cost estimated for 2024. It is recommended that unit prices should be reviewed annually by the City based on costs observed from local suppliers and contractors.

Replacement costs for Applications & Software depend on contracts administered between the City and applicable vendors and for the purposes of this AMP documented costs associated with annual software support and maintenance are captured in addition to any known or predicted contract increases provided by the City.

1.4 Establishing Levels of Service

There were four LOS workshops that were held with staff. The service categories for this volume were covered in Workshop 2 and 3.

- Workshop 2 was held on November 10, 2023, and included the stakeholders for Information Systems & Technology and Parking Equipment, Lots, and Structures service categories.
- Workshop 3 was held on November 21, 2023, and included the stakeholders for Corporate Fleet.

There were City staff from each service area that attended the workshop. The list of attendees is summarized in **Table 1-2**.

Table 1-2: Workshop Attendees - Corporate Services & Parking Operations

Service	Name	Role
Corporate Fleet	Brent Fowler	Director Corp Asset Management & Fleet
Corporate Fleet	Gordan Warner	Manager Fleet Services
IS&T	Jeff Bumstead	Chief Information Officer/IS&T Admin.
IS&T	Jordan Rogers	Manager of GIS
IS&T	Scott Tulk	Manager of Digital Transformation
Parking Structures and Services	Laird Leggo	Manager Licensing Parking Operations & Policy

1.5 Growth Related Impacts on Lifecycle of Assets

As the City continues to expand, there are impacts to existing service levels and assets based on these future needs. The growth-related assumptions and potential impact on the lifecycle of the assets is shown in **Table 1-3**.

Table 1-3: Growth Related Impacts on Lifecycle of Assets

Service Category	Growth Impact Assumptions	How Assumptions Relate to Lifecycle of Assets
Corporate Fleet	• Increase in service demands due to increased operating hours, or capacity covering greater distances.	• Potential increase in capital expenditures for the purchase of additional assets to meet service needs

Service Category	Growth Impact Assumptions	How Assumptions Relate to Lifecycle of Assets
	• Increases to internal capacity (staffing) required to maintain equipment	• Potential increase in operational costs to maintain fleet assets
Information Systems & Technology	• Increase in service demands to operation or capacity of the services • Higher risk of cybersecurity due to increased number of assets required to provide service	• Potential increased operational costs due to increase network size
Parking Equipment, Lots, & Structures	• Increase in service demands by the number of assets required to provide a reliable service without impacting growth opportunities • Increase service needs for additional lots or structures to service a growing community	• Potential increased capital costs to address increased need of more assets to meet service • Potential increase in operational costs due to an increase in the overall network size

2.0 Corporate Fleet

The City's Corporate Asset Management & Fleet Services Department manages and oversees the procurement, operation, maintenance, and re-marketing of over 1,000 owned and leased fleet vehicles and equipment operated by the organization. This includes a wide range of vehicles and equipment such as public transit buses, construction vehicles, plow trucks, trailers, and utility vehicles. The following section of the AMP includes assets that are managed by this department that are utilized to support critical municipal operations.

It is important to note that fleet and equipment assets related to Kingston Fire & Rescue, Police, and Library Services are inventoried under their respective service areas, and as a result, are not included in this volume; however, Fleet Assets deployed at Utilities Kingston are included.

2.1 State of the Local Infrastructure

2.1.1 Asset Inventory and Valuation

Corporate Fleet represents a diverse portfolio of municipal fleet and equipment assets that span numerous City departments. The City develops current replacement values by using historical cost, inflation professional judgement, industry trends, and updated estimates from major suppliers. For inventory purposes, Corporate Fleet asset classes have been further divided into applicable asset sub-classes. The asset classes, asset sub-classes, a count of assets therein, and the total replacement cost (in 2023 dollars) are show in **Table 2-1.** The total replacement cost (2023 dollars) is estimated at **$183.8 million** for the **927 assets** included in the inventory.

Table 2-1: Inventory Summary by Asset Type - Corporate Fleet

Asset Class	Asset Sub-Class	Count	Total Replacement Cost (2023)
Vehicles	Light Duty	194	$7,509,200
Vehicles	Medium Duty	55	$4,411,600
Vehicles	Heavy Duty	80	$22,264,600
Vehicles	Transit Bus	81	$128,514,600
Vehicles	Off Road	52	$8,174,800
Fleet Equipment	Misc. Equipment	286	$1,963,500
Fleet Equipment	Off Road	102	$8,579,300
Fleet Equipment	Trailer	77	$2,335,300
Overall	**Not Applicable (N/A)**	**927**	**$183,752,900**

2.1.2 Asset Age Summary

The average age, average condition, expected useful life, and average remaining useful life of the assets in the Vehicles and Fleet Equipment asset classes are summarized in **Table 2-2**. The overall average age of Corporate Fleet assets is seven years and the average remaining useful life is seven years.

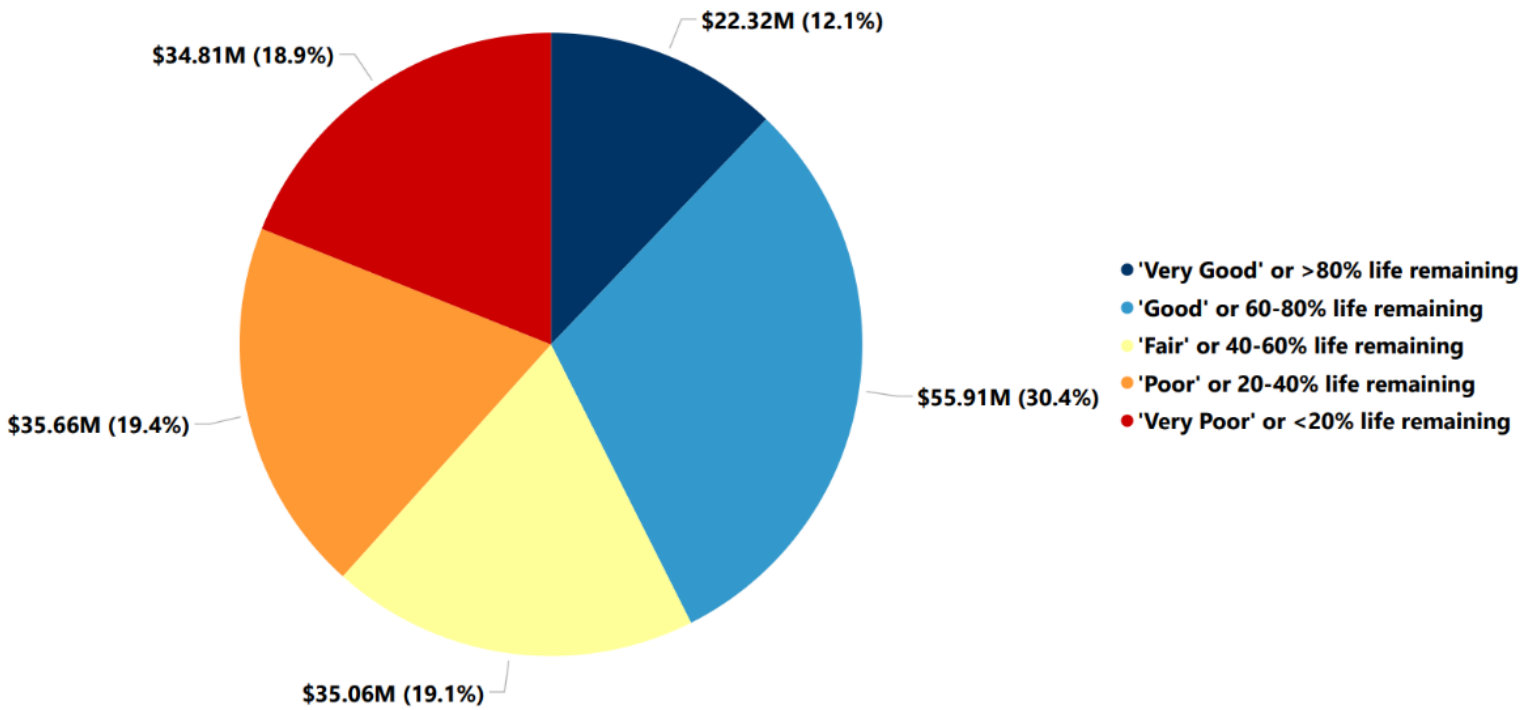
Table 2-2: Average Age, Average Condition, Expected Useful Life, and Average Remaining Useful Life - Corporate Fleet

Asset Class	Asset Sub-Class	Average Age (Years)	Average Condition Grade	Expected Useful Life (Years)	Average Remaining Useful Life (Years)
Vehicles	Light Duty	7	Fair	10	4
Vehicles	Medium Duty	8	Poor	10	3
Vehicles	Heavy Duty	11	Poor	10	2
Vehicles	Transit Bus	8	Fair	15	7
Vehicles	Off Road	8	Fair	10	5
Fleet Equipment	Misc. Equipment	4	Very Good	15	12
Fleet Equipment	Off Road	9	Fair	15	7
Fleet Equipment	Trailer	14	Poor	15	4
Overall	**N/A**	**7**	**Fair**	**10 to 15**	**7**

2.1.3 Asset Condition

An overall condition summary for the assets within the Corporate Fleet service area by replacement cost (in 2023 dollars) is shown in **Figure 2-1**. About 62% of the assets are in very good to fair condition.

Figure 2-1: Condition Summary and 2023 Replacement Cost – Corporate Fleet

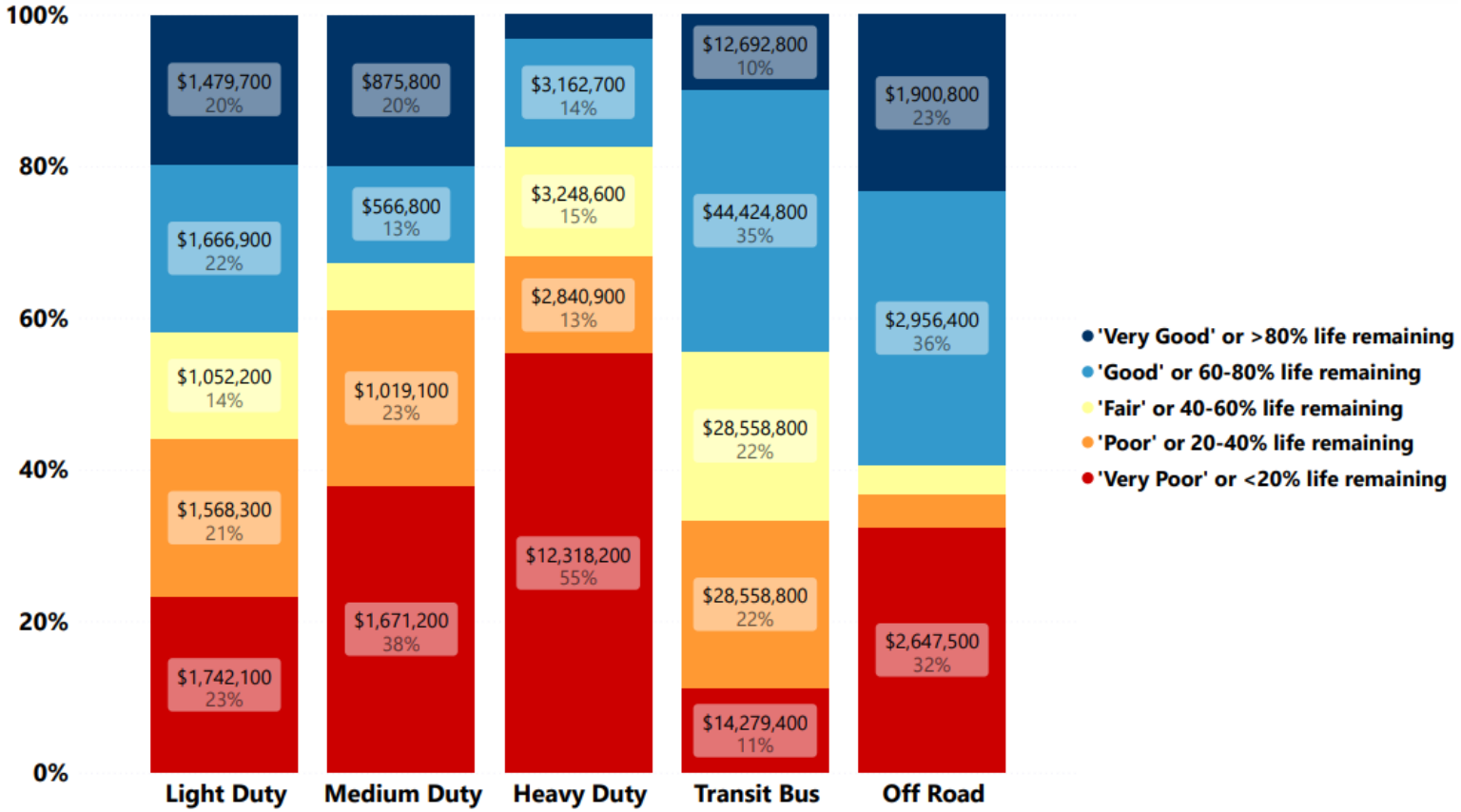


Corporate Fleet

A condition summary for Vehicle assets is provided in **Figure 2-2** by asset type and replacement cost (in 2023 dollars). In the absence of condition assessment data, the condition of the assets has primarily been determined based on age and EUL (the percentage of remaining useful life) or Life-To-Date usage (operating hours and /or mileage).

However, for Corporate Fleet assets, procedures are in place to verify their condition through various methods. These include visual inspections, legislative requirements (e.g., safety inspections), feedback from operators, supervisors, and driver trainers, engine fault code alerts from the telematics system, and preventative maintenance performed by mechanics during regularly scheduled maintenance.

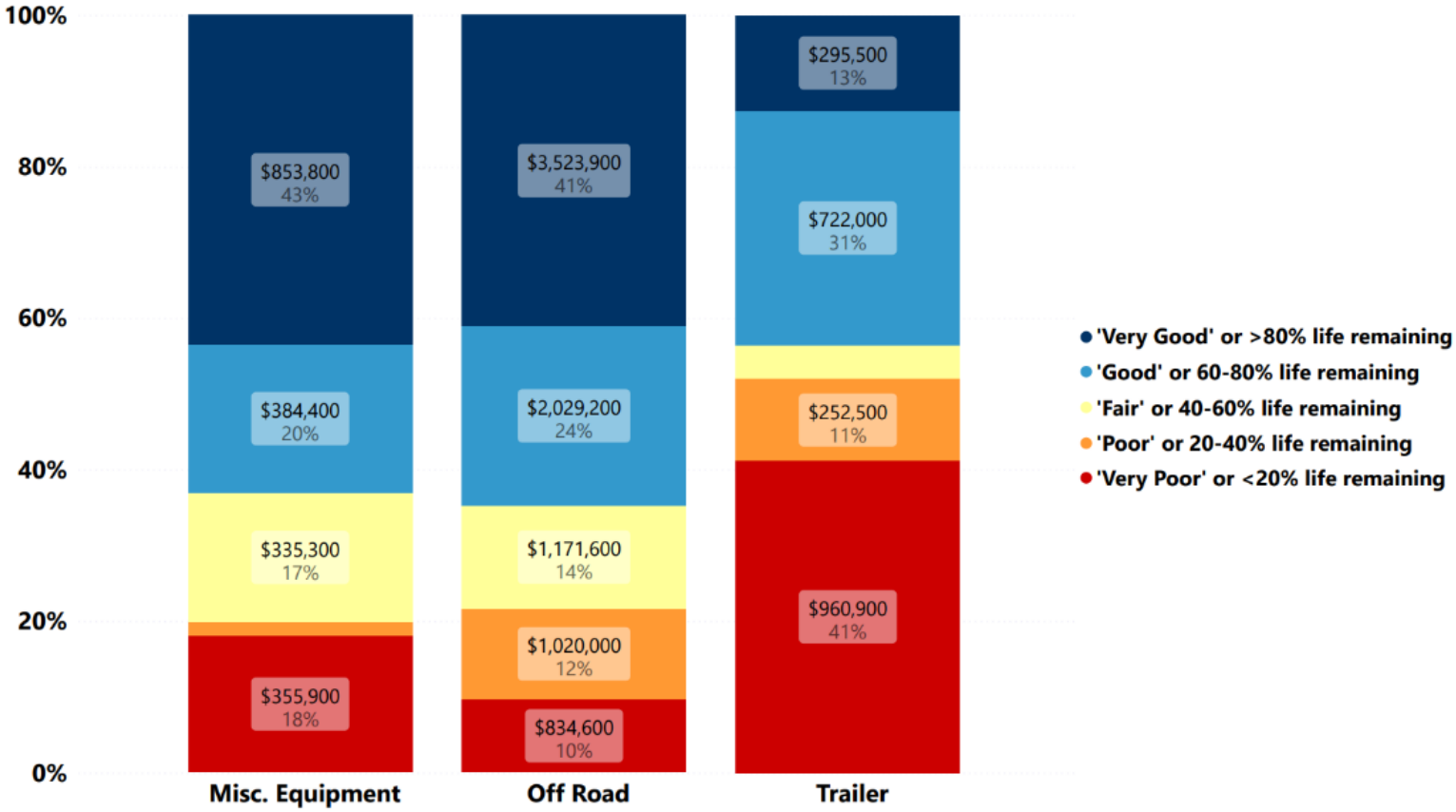
Figure 2-2: Condition Summary by Asset Type and 2023 Replacement Cost - Corporate Fleet (Vehicles)



Corporate Fleet

A condition summary for Fleet Equipment assets is provided in **Figure 2-3** by asset type and replacement cost (in 2023 dollars). In the absence of condition assessment data, the condition of the assets has primarily been determined based on age and EUL.

Figure 2-3: Condition Summary by Asset Type and 2023 Replacement Cost - Corporate Fleet (Fleet Equipment)



2.1.4 Data Sources and Confidence

The asset data for Corporate Fleet is maintained by the City in a Enterprise-wide fleet and equipment asset and work order management application from AssetWorks Inc. called FleetFocus (also known as M5). This application served as the main data source for this AMP. The City has dedicated staff who update the inventory data for Corporate Fleet in real-time while also supporting Kingston Fire & Rescue, Kingston Police, and the Kingston Frontenac Public Library Board (KFPL) with hosting their fleet data in the City's Fleet Management Information System (FMIS). This suggests that the data source is reliable.

Data confidence can be estimated based on the confidence level of various qualifiers and can be presented on a scale from 0% (low) to 100% (high), as shown in **Table 2-3**. The qualifiers chosen for evaluation are specifically targeted for estimating overall confidence of condition reporting within the SOLI.

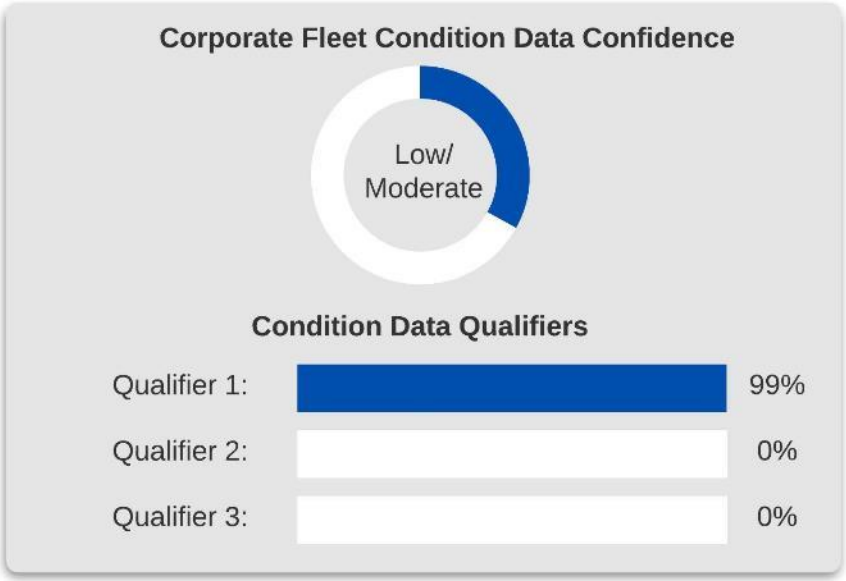
Table 2-3: Data Confidence Scale

Confidence Level	Low	Low/ Moderate	Moderate	Moderate/ High	High
Average of Qualifiers	0% - 19%	20% - 39%	40% - 59%	60% - 79%	80% - 100%

Assuming the data source is reliable, the following qualifiers were considered to estimate data confidence regarding the data utilized in the creation of this SOLI report:

- **Qualifier 1**: The percentage of assets in the asset inventory where construction, installation, or acquisition years are documented (99%);
- **Qualifier 2**: The percentage of assets in the asset inventory that have condition assessment data documented (0%); and,
- **Qualifier 3**: The percentage of the estimated overall Corporate Fleet replacement value, in 2023 dollars, attributed to assets in the asset inventory where condition can be assessed using available data (i.e., based on condition assessment history and/or age-based condition) (0%).

Figure 2-4: SOLI Report Data Confidence - Corporate Fleet



As summarized in **Figure 2-4**, the overall data confidence for the condition of Corporate Fleet assets is estimated as Low/Moderate. Currently, the asset conditions for Corporate Fleet assets are based on age. Data confidence can be increased by improving the documentation of condition assessment data. For Corporate Fleet assets, this could include adding an additional attribute within FleetFocus to track assigned asset condition ratings, which can be assigned or updated when staff perform regularly scheduled maintenance.

2.2 Levels of Service

The City has developed the customer and technical LOS, based on contributions from staff. It was decided that Quality and Environmental Acceptability were key attributes in gauging the performance of the assets. **Table 2-4** and **Table 2-5** outline the City's current community and technical LOS for Corporate Fleet.

Corporate Fleet

Table 2-4: Community LOS - Corporate Fleet

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Quality	Fleet and equipment are kept in good working condition	Percentage of assets that are meeting condition performance objectives.	76%
Environmental Acceptability	Corporate fleet assets are environmentally sustainable by reducing GHG emissions and fuel economy.	Annual GHG Emissions and Fuel Consumption	12,432 t CO_2e (based on 2022 data)

Table 2-5: Technical LOS - Corporate Fleet

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Quality	Corporate fleet is maintained based on fleet best practices	The cost of maintaining the fleet asset per operating hour or km	Currently not available

2.3 Risk Assessment

The risk ratings for Corporate Fleet includes Vehicles and Fleet Equipment. The risk scores were calculated using the risk methodology and approach outlined in the Introduction materials which were provided under a separate document. **Table 2-6** summarizes the risk factors for the Corporate Fleet assets.

Table 2-6: Risk Factors - Corporate Fleet

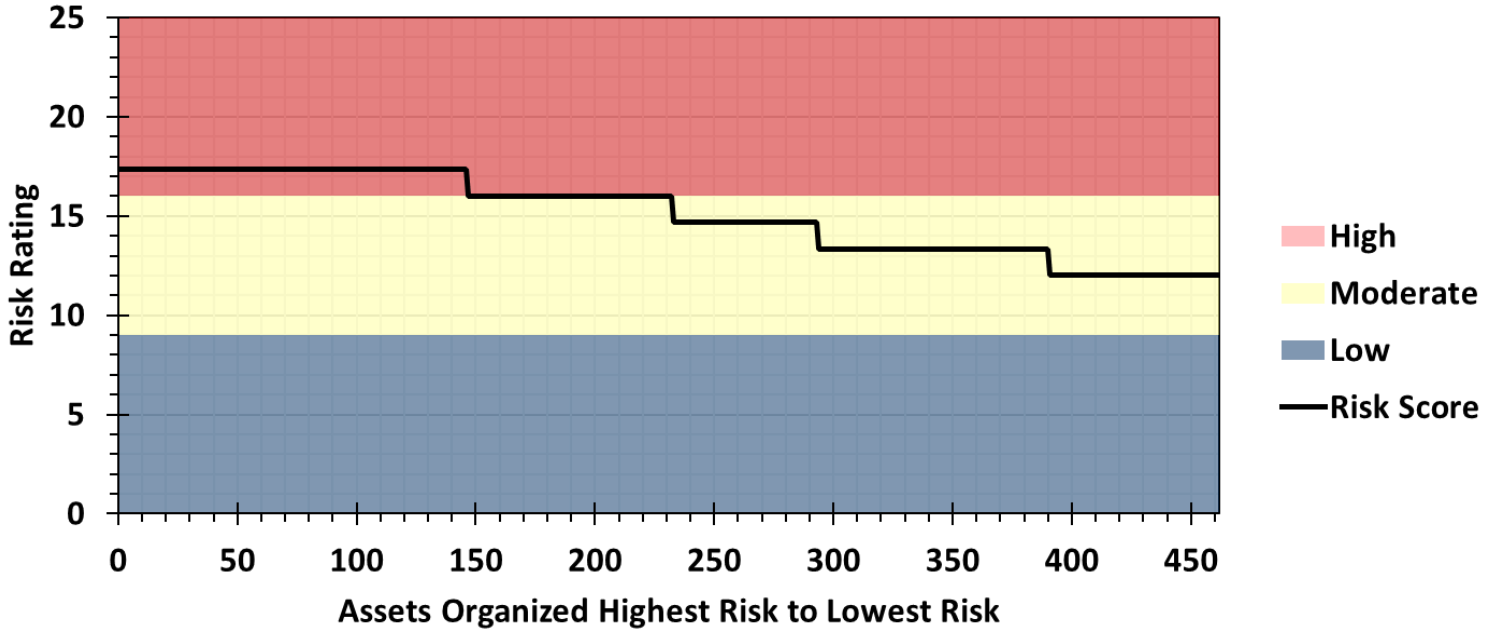
Factors	Risk Ratings
A - Condition	The condition of the assets was determined either by visual or age-based and can be found in the SOLI section of this AMP.
B - Performance	The performance of the Vehicles was identified as being "usually reliable" and assigned a score of 3 for calculating risk score. The Fleet Equipment was identified as “always reliable” and assigned a score of 1 for calculating risk.
C - Climate Change	The climate change ratings were determined at the asset class level by identifying climate change hazard interactions. The Vehicles were identified as a "high" risk and assigned a rating of 5 when calculating the risk score, while the Fleet Equipment was identified as a "low" climate risk and given a 1 for calculating risk.
D - Impact	The impact of the Vehicles was identified as “moderate” impact and given a score of 1 for calculating risk. The Fleet Equipment was recognized as "low" impact and assigned a score of 0 for calculating risk score.
E - Importance	A "high" importance rating was given to Vehicles and a score of 3 was assigned for calculating risk score. The Fleet Equipment asset class was identified as “moderate” importance and assigned a score of 2 when calculating risk.

The individual risk ratings were used in calculating the risk score for each of the assets.

2.3.1 Risk Profile

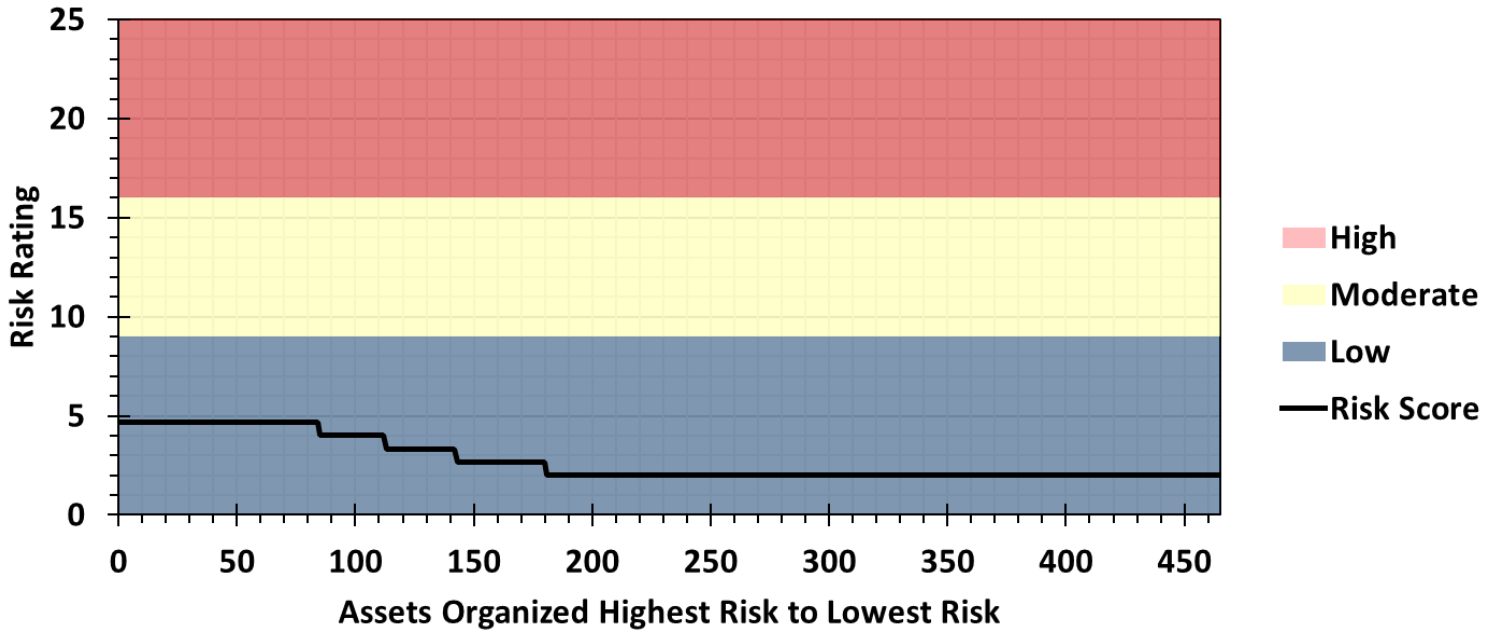
The Risk profile of the Vehicles assets is displayed in **Figure 2-5**. Of the 462 Vehicles tracked within the asset inventory, approximately 50% (232) are classified as High risk and the remaining 230 as Moderate risk. These assets are considered high and moderate priorities for the implementation of lifecycle activities and possible replacement.

Figure 2-5: Risk Profile - Corporate Fleet (Vehicles)



The Risk profile of the Fleet Equipment assets is displayed in **Figure 2-6**. All 465 Fleet Equipment assets tracked in the asset inventory are considered as Low risk.

Figure 2-6: Risk Profile - Corporate Fleet (Fleet Equipment)



2.4 Asset Management Strategy

2.4.1 Lifecycle Activities – Corporate Fleet

The lifecycle activities considered include:

- **Non-Infrastructure Solutions**: Actions or policies that can lower costs and extend useful lives.
- **Maintenance Activities**: Regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events.
- **Renewal / Rehabilitation Activities**: Significant repairs designed to extend the life of the asset.
- **Replacement / Construction Activities**: Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehabilitation is no longer an option.

- **Disposal Activities**: Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed.
- **Expansion / Growth / Service Improvement Activities**: Planned activities required to extend services to previously unserved areas or expand services to meet growth demands.

Table 2-7 describes the lifecycle activities that can be implemented within the asset management strategy for Corporate Fleet assets. The lifecycle activities presented below are existing activities performed by the City, identified during a workshop with City staff in February of 2024.

Table 2-7: Lifecycle Activities - Corporate Fleet

Lifecycle Activity Type	Description of Activity	Frequency / Timing
Non-Infrastructure Solutions	Zero-Emission Vehicle Transition Studies	As required
Non-Infrastructure Solutions	Review / Benchmarking of Lifecycles	As required
Non-Infrastructure Solutions	Evaluate and explore with equipment manufacturers new technologies and design improvements to improve reliability and longevity	As required (annual meetings with major suppliers)
Non-Infrastructure Solutions	Lifecycle Management Review – Condition Assessment	Annually
Non-Infrastructure Solutions	Green Fleet Policy	As required
Non-Infrastructure Solutions	Solid Waste Cart-Based Transition Plan	Project-based

Corporate Fleet

Lifecycle Activity Type	Description of Activity	Frequency / Timing
Non-Infrastructure Solutions	Optimal asset lifecycles are continually assessed in determining timing of replacements leveraging maintenance data from FMIS	As required
Maintenance Activities	Regular Scheduled Maintenance and Inspections	Based on manufacturer's recommendations
Renewal / Rehabilitation Activities	Transit Buses – Refurbishment	At 30,000 hours or approximately 7 years
Renewal / Rehabilitation Activities	Fleet - Corrosion Prevention Program	Annual rustproofing/ undercoating program for specific fleet asset categories
Renewal / Rehabilitation Activities	Snowplow Trucks - Refurbishment	As required for snowplow truck (review at year 7 for year 8 budgeting if required)
Renewal / Rehabilitation Activities	Street Sweepers - Refurbishment	At 3500 hours or approximately 5 years
Replacement / Construction Activities	Replacement at End of Useful Life (EUL)	End of EUL
Disposal Activities	Public Auction of Fleet Assets administered by a Third Party	End of EUL

Corporate Fleet

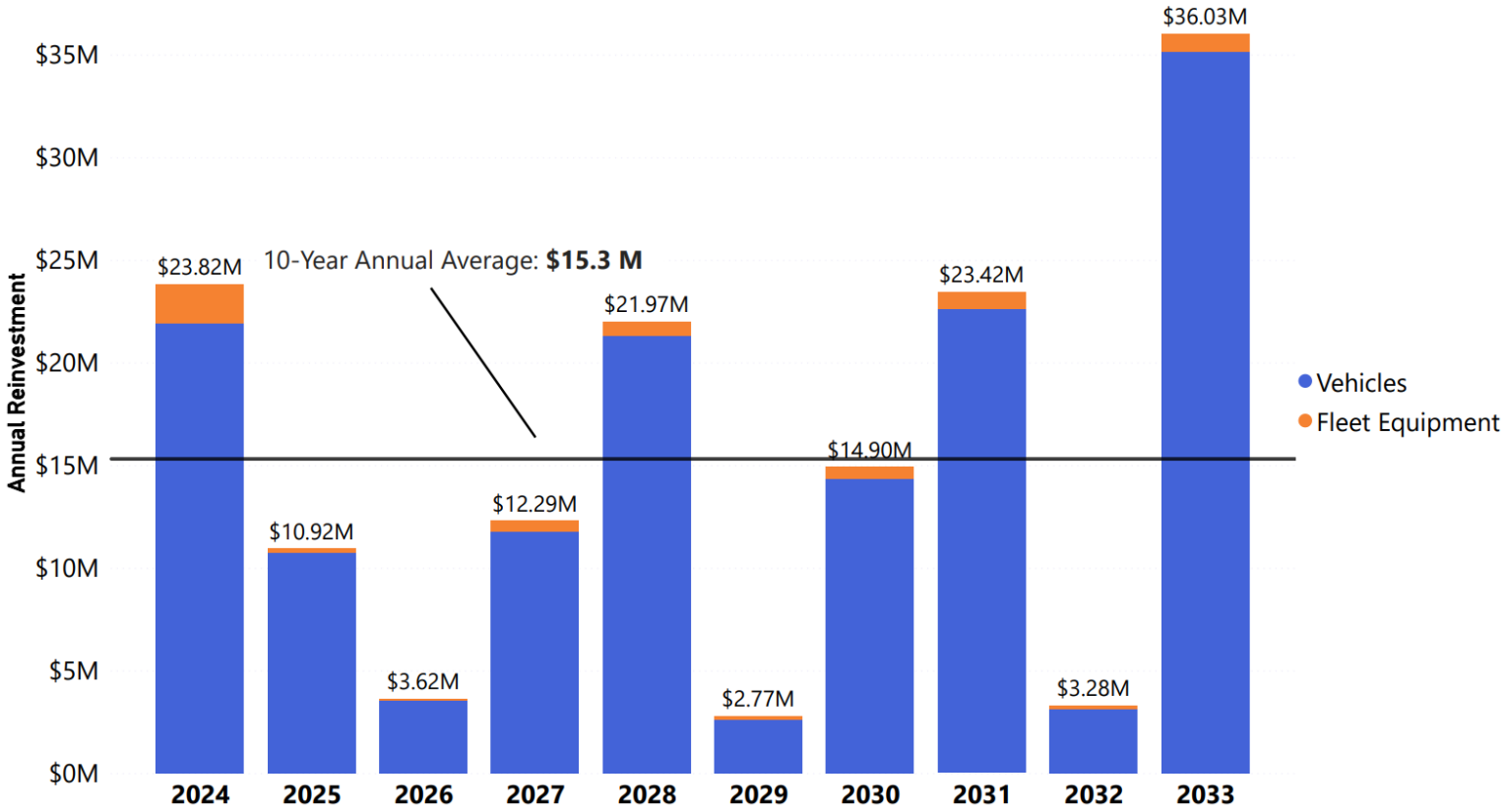
Lifecycle Activity Type	Description of Activity	Frequency / Timing
	Plan with auction to target seasonal disposal of assets to maximize return when demand is higher Optimize lifecycle analysis on light duty fleet assets through leveraging leasing program with Enterprise Fleet Management *(also assists with minimizing obsolescence of EV battery capacity and technology)*	
Disposal Activities	Review opportunities to re-purpose vehicle outfitting and attachments past the lifecycle of the original asset it was installed on	End of EUL
Expansion / Growth / Service Improvement Activities	Business Cases to support the addition of Fleet Assets. Guided by: • City of Kingston Strategic Plan (2023-2026) • Green Fleet Strategy • Watson Population Growth Study & Council Adoption	Based on service provider's needs
Expansion / Growth / Service Improvement Activities	Zero-Emission Fleet Transition	Based on service provider's needs

2.4.2 Funding the Lifecycle Activities – Corporate Fleet

Lifecycle modeling allows for the City to understand the future reinvestment needs of their existing assets by generating a theoretical asset replacement forecast that considers available asset inventory data. The age, EUL, replacement cost, condition, and risk score of each asset can be leveraged within the lifecycle model to proactively plan for reinvestment over a period of time. Asset replacement forecasts within this subsection estimate the required reinvestment for assets over the next 10 years based on available asset inventory data.

There is a total of approximately **$153 million** to be reinvested into the Corporate Fleet assets owned by the City in the next 10 years. This translates an annual average of approximately **$15.3 million** over a 10-year period, as presented in **Figure 2-7**.

Figure 2-7: 10-Year Capital Reinvestment Needs - Corporate Fleet

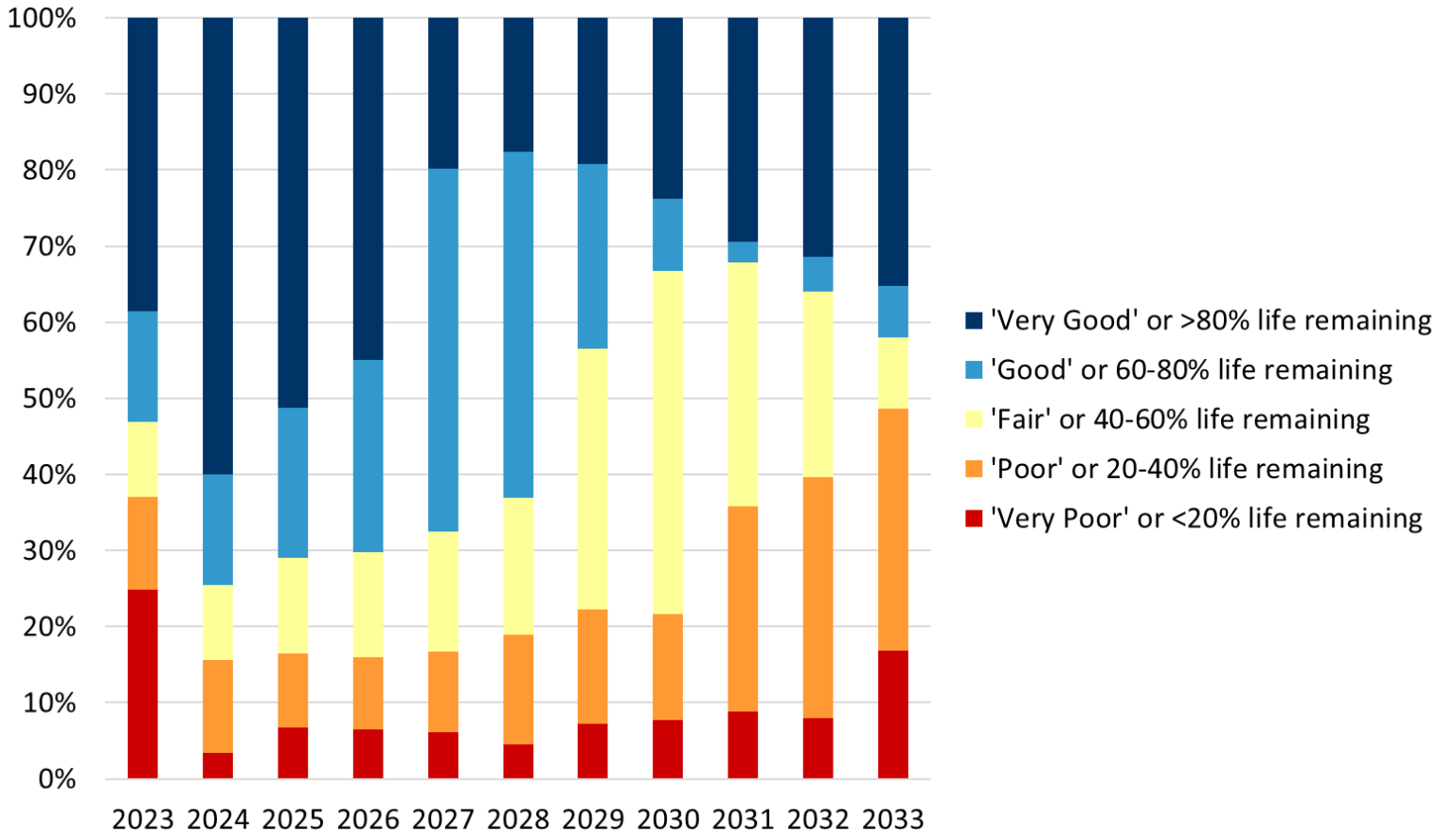


It is important to note that forecasting in this lifecycle model relies heavily on age and EUL to determine renewal or replacement needs and that tracking of condition data for Corporate Fleet assets by the City will assist at refining forecasted expenditures in the decades to come. The LOS includes maintaining the current assets in poor or better condition (76%). From the lifecycle model, the percentage of Corporate Fleet assets in poor or better condition fluctuates throughout the next 10-years, reaching a high of 97% in 2024 and eventually finishing at 83% in 2033.

Corporate Fleet

Figure 2-8 shows an overview of the condition of Corporate Fleet over the next 10 years based on the lifecycle model.

Figure 2-8: Condition Overview by Year Based on Lifecycle Model - Corporate Fleet



3.0 Information Systems & Technology

The Corporate Services – Information Systems & Technology (IS&T) department oversees all activities related to technology, including managing software applications, network infrastructure, computer systems, database systems, and security systems. The team works closely with other departments to understand their technology requirements and create solutions that help the organization achieve its goals effectively and efficiently. IT Services staff through their deployment of a centralized service desk responded to 12,781 service requests in 2023. This chapter includes assets that are managed under the IS&T department.

Note on Scope: At the time of preparing this AMP no data was readily available for the Video Camera Systems asset class, and as a result, the asset class has been excluded. It is recommended that the City develops an inventory of Video Camera Systems to be considered in subsequent iterations of the AMP.

The Applications & Software asset class includes digital assets that do not exhibit a physical condition. These assets have been included in the AMP for inventory purpose only.

3.1 State of the Local Infrastructure

3.1.1 Asset Inventory and Valuation

The assets maintained by the IS&T service support various departments at the City. The asset classes, asset types, a count of assets therein, and the total replacement cost (in 2023 dollars) are show in **Table 3-1**. The total replacement cost (2023 dollars) is estimated at **$13.2 million** for the **2,799 assets** included in the inventory.

Table 3-1 Notes

[1] At this time of this AMP, costs associated with approximately 47% of inventoried software assets were unknown. Costs associated with software assets will be further refined in future iterations of this AMP.

Table 3-1: Inventory Summary by Asset Type - IS&T

Asset Class	Asset Type	Count	Total Replacement Cost (2023)
IT Infrastructure	Access Switch Device	171	$427,500
IT Infrastructure	General IT Infrastructure	140	$4,302,100
IT Infrastructure	Wireless Access Point	225	$1,800,000
End User Devices	Computer – Desktop	488	$976,000
End User Devices	Computer – Laptop	880	$1,320,000
End User Devices	Phones/Tablets	546	$546,000
End User Devices	Printers	187	$187,000
Applications & Software	Software Subscription	16	$1,241,900[1]
Applications & Software	Software Support & Maintenance – Annual	146	$2,431,500[1]
Overall	**N/A**	**2,799**	**$13,232,000**

3.1.2 Asset Age Summary

The average age, average condition, expected useful life, and average remaining useful life of the asset types in the IS&T service area are summarized in **Table 3-2**. The overall average age of IS&T assets is four years, and the average remaining useful life is two years.

Table 3-2: Average Age, Average Condition, Expected Useful Life, and Average Remaining Useful Life – IS&T

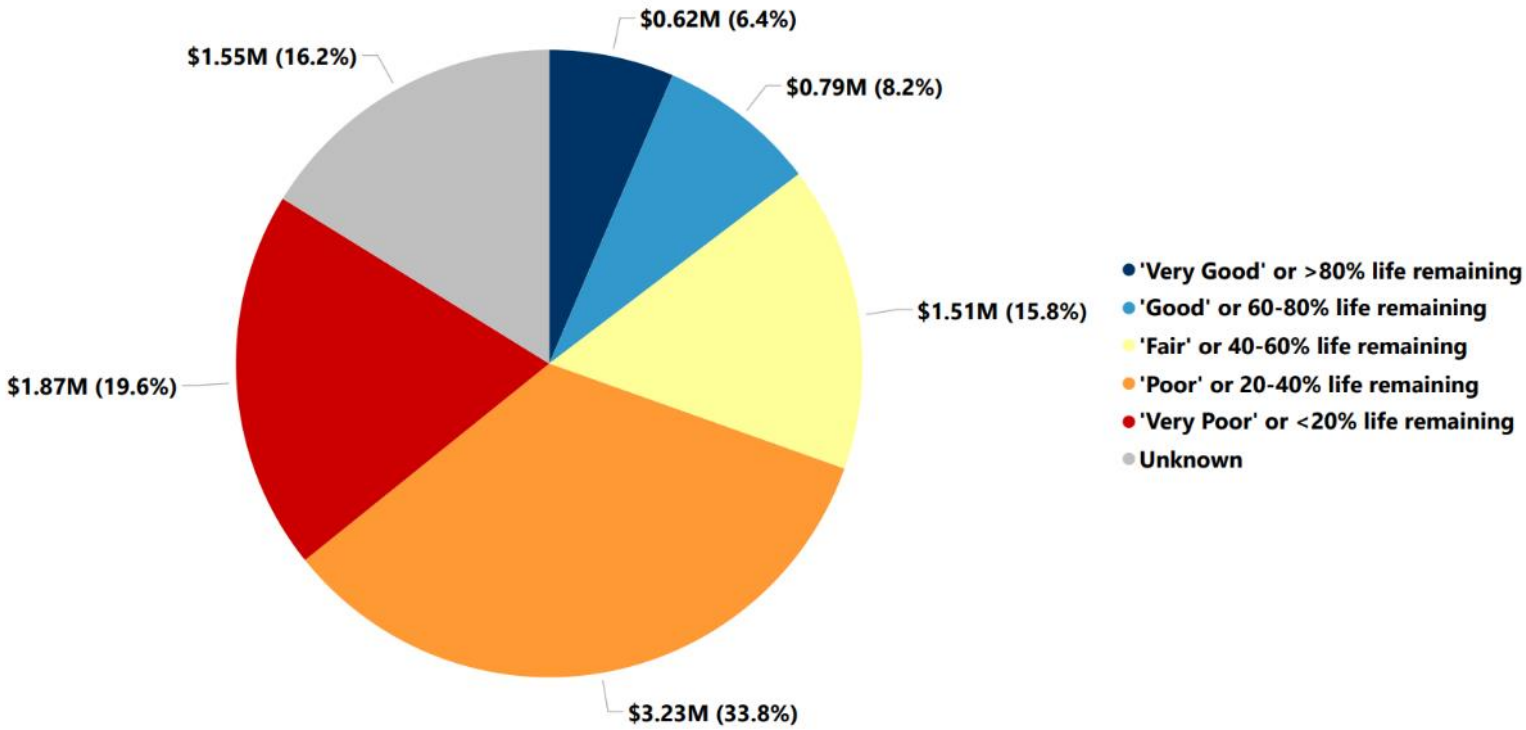
Asset Class	Asset Type	Average Age (Years)	Average Condition Grade	Expected Useful Life (Years)	Average Remaining Useful Life (Years)
IT Infrastructure	Access Switch Device	Unknown	Unknown	5	Unknown
IT Infrastructure	General IT Infrastructure	6	Fair	10	5
IT Infrastructure	Wireless Access Point	9	Very Poor	10	1
End User Devices	Computer – Desktop	4	Poor	5	1
End User Devices	Computer – Laptop	3	Fair	5	2
End User Devices	Phones/ Tablets	Unknown	Unknown	5	Unknown
End User Devices	Printers	4	Fair	7	3
Overall	**N/A**	**4**	**Poor**	**5 to 10**	**2**

Applications & Software assets have been excluded as they are digital assets. Additionally, at the time of preparing the AMP, the age of access switch devices and phones/tablets is not well documented in the asset data. This will be further refined in future updates of the AMP.

3.1.3 Asset Condition

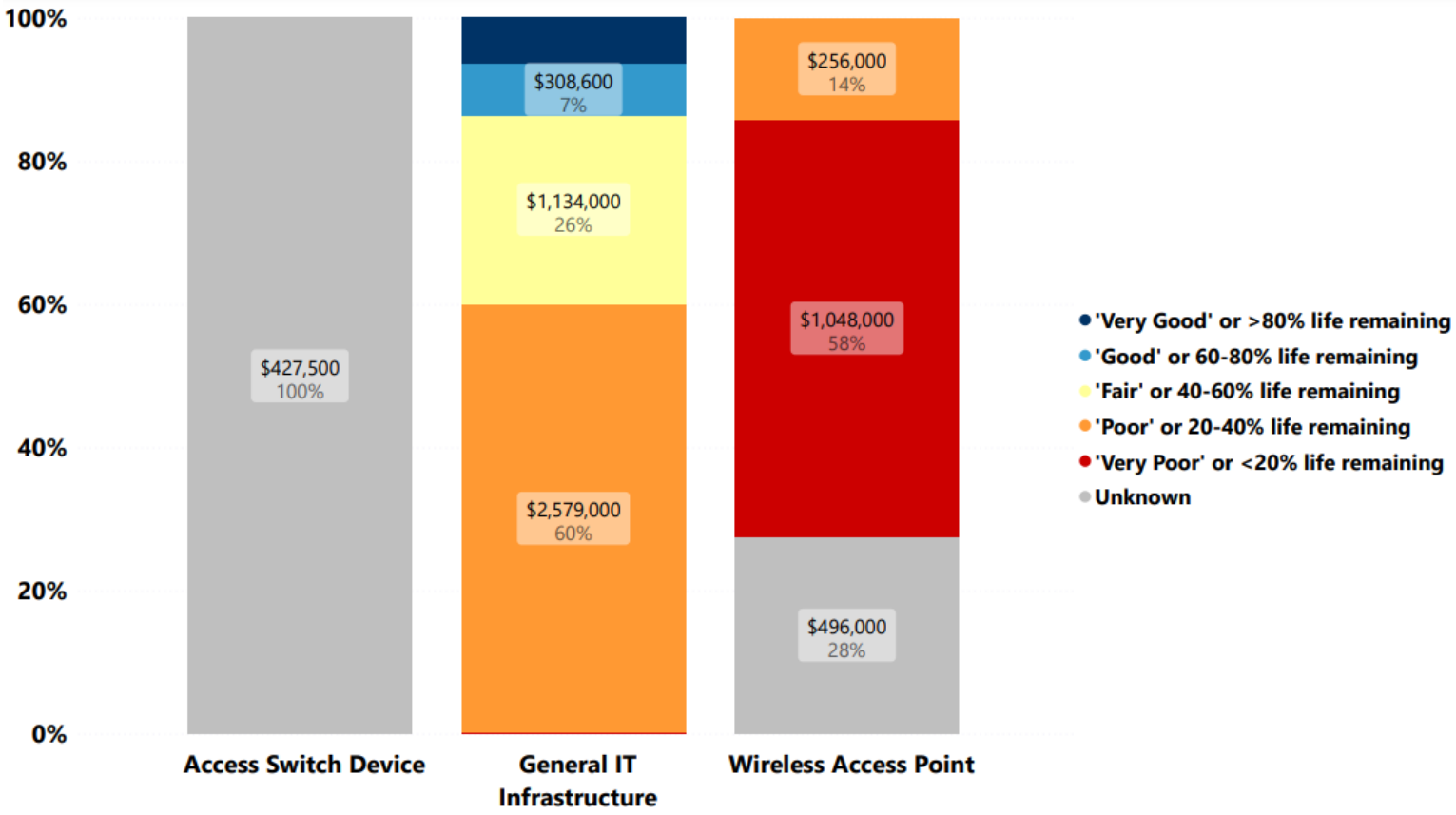
An overall condition summary for assets under the IS&T service area by replacement cost (in 2023 dollars) is shown in **Figure 3-1**. There is approximately 30% of the assets that are in very good to fair condition, while 16.2% of the assets with an unknown condition.

Figure 3-1: Condition Summary and 2023 Replacement Cost - IS&T



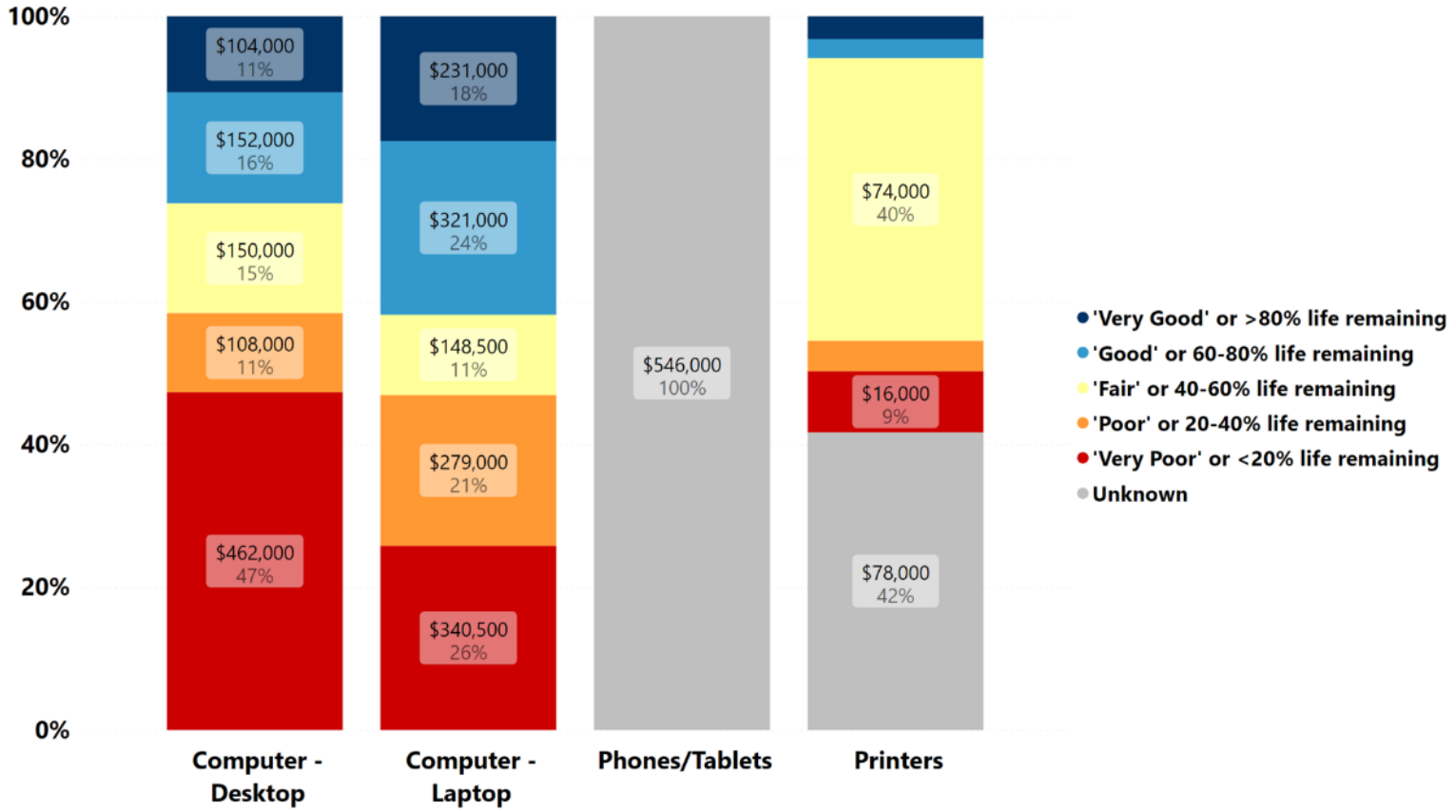
A condition summary for IT Infrastructure assets is provided in **Figure 3-2** by asset type and replacement cost (in 2023 dollars). The condition of general IT infrastructure has been determined utilizing a combination of available asset condition data assigned by the IS&T managers during the generation of this AMP and age-based condition methods. In the absence of condition assessment data, the condition of access switch devices, servers, and wireless access points have been primarily determined based on age and EUL.

Figure 3-2: Condition Summary by Asset Type and Replacement Cost - IS&T (IT Infrastructure)



A condition summary for End User Devices is provided in **Figure 3-3** by asset type and replacement cost (in 2023 dollars). In the absence of condition assessment data, the condition of the assets have primarily been determined based on age and EUL.

Figure 3-3: Condition Summary by Asset Type and Replacement Cost - IS&T (End User Devices)



3.1.4 Data Sources and Confidence

Asset data for IS&T assets is maintained by City staff within various Microsoft Excel spreadsheets, often dedicated to specific asset types, and at this time there is no centralize repository for asset information. City staff compiled the various Excel-based inventories in 2023, translating to the assumption that the data source can be seen as reliable.

Data confidence can be estimated based on the confidence level of various qualifiers and can be presented on a scale from 0% (low) to 100% (high), as shown in **Table 3-3**. The qualifiers chosen for evaluation are specifically targeted for estimating overall confidence of condition reporting within the SOLI. Applications and software assets are digital in nature and therefore have been excluded from consideration in the following data confidence estimation.

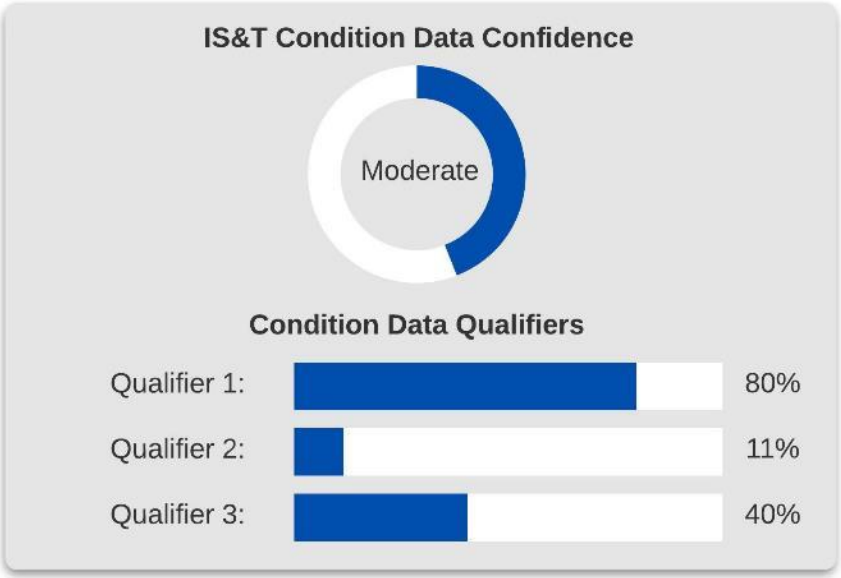
Table 3-3: Data Confidence Scale

Confidence Level	Low	Low/ Moderate	Moderate	Moderate/ High	High
Average of Qualifiers	0% - 19%	20% - 39%	40% - 59%	60% - 79%	80% - 100%

Assuming the data sources are reliable, the following qualifiers were considered to estimate data confidence regarding the data utilized in the creation of this SOLI report:

- **Qualifier 1**: The percentage of assets in the asset inventory where construction, installation, or acquisition years are documented (80%);
- **Qualifier 2**: The percentage of assets in the asset inventory that have condition assessment data documented (11%); and,
- **Qualifier 3**: The percentage of the estimated overall IS&T replacement value (excluding applications and software), in 2023 dollars, attributed to assets in the asset inventory with documented condition assessment data (i.e., condition is not solely age-based) (40%).

Figure 3-4: SOLI Report Data Confidence - IS&T



As summarized in **Figure 3-4**, the overall asset condition data confidence for IS&T assets is estimated as Moderate. Currently, the majority of the conditions for these assets are solely age-based except for some IT Infrastructure assets where a condition rating was assigned directly by IS&T staff. This includes local area network cabling, cooling devices, PDUs, transfer switches, UPS units, servers, and network connection appliances. The data confidence can be increased by improving the quality of the data and/or filling data gaps.

3.2 Levels of Service

The City developed and established the community and technical LOS based on input from municipal staff. It was determined that the key attributes for the performance of the assets were based on Quality and Reliability. **Table 3-4** and **Table 3-5** outline the City's current community and technical levels of service for IS&T.

Table 3-4 and Table 3-5 Notes

[1] Variance due to security and maintenance activities. Additional skew due to inclusion of partner organizations like Kingston Frontenac Public Library (KFPL) and Utilities Kingston (UK). Partner production systems are sometimes in development state outside of City standard maintenance windows.

[2] IT asset conditions for this AMP are primarily based on age and EUL. In general, the EUL of IT assets is quite short, with most assets expected to last between 5 and 7 years. As such, the proportion of IT assets in poor or better condition will fluctuate significantly each year. In future iterations of this AMP, the City may consider additional factors to determine IT asset conditions and associated lifecycle implications such as available capacity for future growth, integration, vendor support, and security updates. In some cases, although a device may be operational with adequate performance parameters, it is no longer fit for purpose given vulnerabilities, integration obsolescence, or available capacity for service expansion.

Table 3-4: Community LOS - IS&T

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Reliability	Provide efficient and reliable services for end-users	% of uptime is greater than 95%	99.6%[1]

Table 3-5: Technical LOS - IS&T

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Quality	Equipment and assets are kept in good working condition	Percentage of assets that are meeting condition performance objectives.	52%[2]

3.3 Risk Assessment

The risk ratings for physical IS&T assets included IT Infrastructure and End User Devices. The risk scores were calculated using the risk methodology and approach outlined in the Introduction. **Table 3-6** summarizes the risk factors for the IS&T assets.

Table 3-6: Risk Factors - IS&T

Factors	Risk Ratings
A - Condition	The condition of the assets was determined either by visual or age-based and can be found in the SOLI section of the AMP.
B - Performance	The performance of all IS&T assets was identified as "usually reliable" and assets were assigned a rating of 3 for calculating risk score.
C - Climate Change	The climate change ratings were determined at the asset class level by identifying climate change hazard interactions. The IT Infrastructure and End User Devices were identified as a “moderate” risk and assigned a rating of 3 for calculating the risk score.

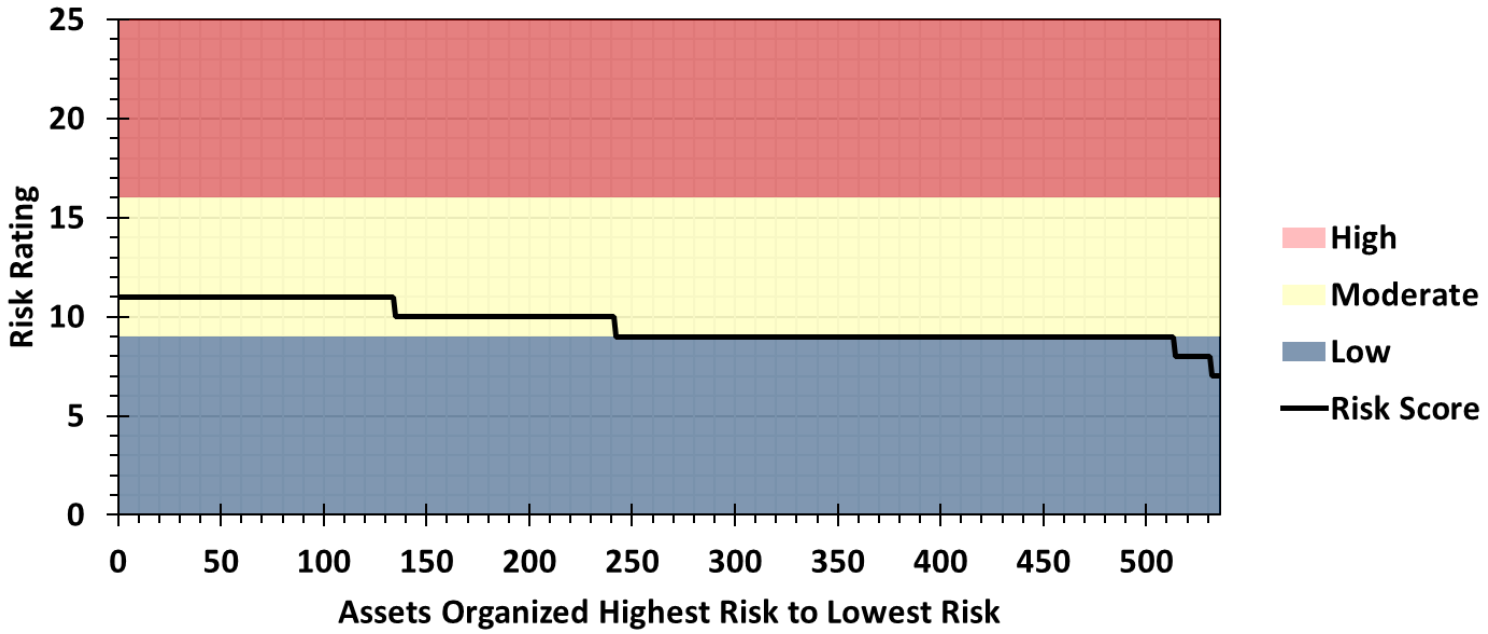
Factors	Risk Ratings
D - Impact	The impact of all IS&T asset classes was identified as "moderate" impact and assets were assigned a rating of 1 for calculating risk score.
E - Importance	A “high” importance rating was applied to the IT Infrastructure assets and a rating of 3 was assigned for calculating risk score. The End User Devices asset class was identified as “moderate” importance and assigned a rating of 2 when calculating risk.

The individual risk ratings were used in calculating the risk score for each of the assets.

3.3.1 Risk Profile

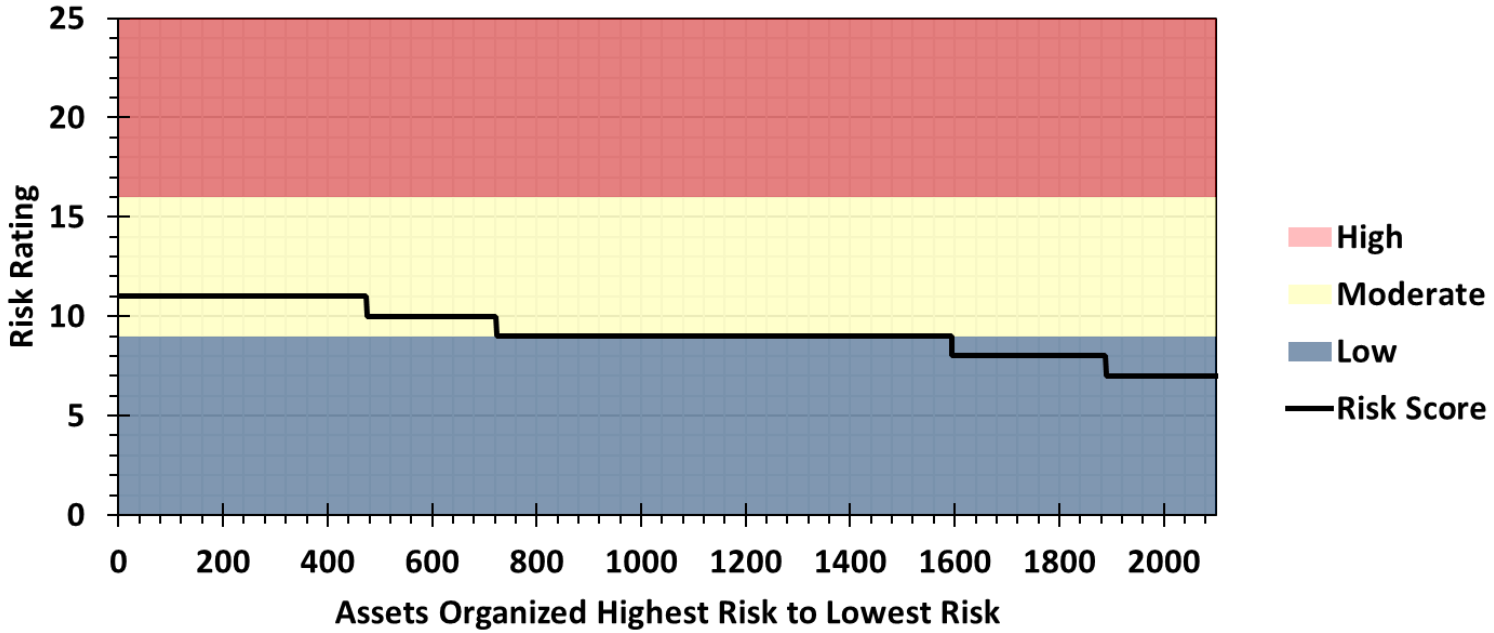
The Risk profile of the IT Infrastructure assets is displayed in **Figure 3-5**. Of the 536 IT Infrastructure assets tracked within the asset inventory, approximately 95% (513) are classified as Moderate risk. These assets are considered moderate priorities for the implementation of lifecycle activities and possible replacement. The remaining assets are considered Low risk.

Figure 3-5: Risk Profile - IS&T (IT Infrastructure)



The Risk profile of the End User Devices assets is displayed in **Figure 3-6**. Of the 2,101 End User Devices tracked within the asset inventory, about 76% (1,594) are classified as Moderate risk. These assets are considered moderate priorities for implementation of lifecycle activities and possible replacement. The remaining assets are considered Low risk.

Figure 3-6: Risk Profile - IS&T (End User Devices)



3.4 Asset Management Strategy

3.4.1 Lifecycle Activities – IS&T

The lifecycle activities considered include:

- **Non-Infrastructure Solutions**: Actions or policies that can lower costs and extend useful lives.
- **Maintenance Activities**: Regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events.
- **Renewal / Rehabilitation Activities**: Significant repairs designed to extend the life of the asset.

- **Replacement / Construction Activities**: Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehabilitation is no longer an option.
- **Disposal Activities**: Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed.
- **Expansion / Growth / Service Improvement Activities**: Planned activities required to extend services to previously unserved areas or expand services to meet growth demands.

Table 3-7 describes the lifecycle activities that can be implemented within the asset management strategy for IS&T assets. The lifecycle activities presented below are existing activities performed by the City, identified during a workshop with City staff in January 2024.

Table 3-7: Lifecycle Activities- IS&T

Lifecycle Type	Description of Activity	Frequency / Timing
Maintenance Activities	Software – In Place Version Lifts	Annually or bi-annually
Maintenance Activities	Software – Firmware, Maintenance and Updates	Weekly or monthly
Renewal / Rehabilitation Activities	Software – Support Contract Renewals	Annually (unless multi-year contract in place)
Renewal / Rehabilitation Activities	Replacement of Parts/Components	As required
Replacement / Construction Activities	Replacement of IS&T Assets	End of EUL

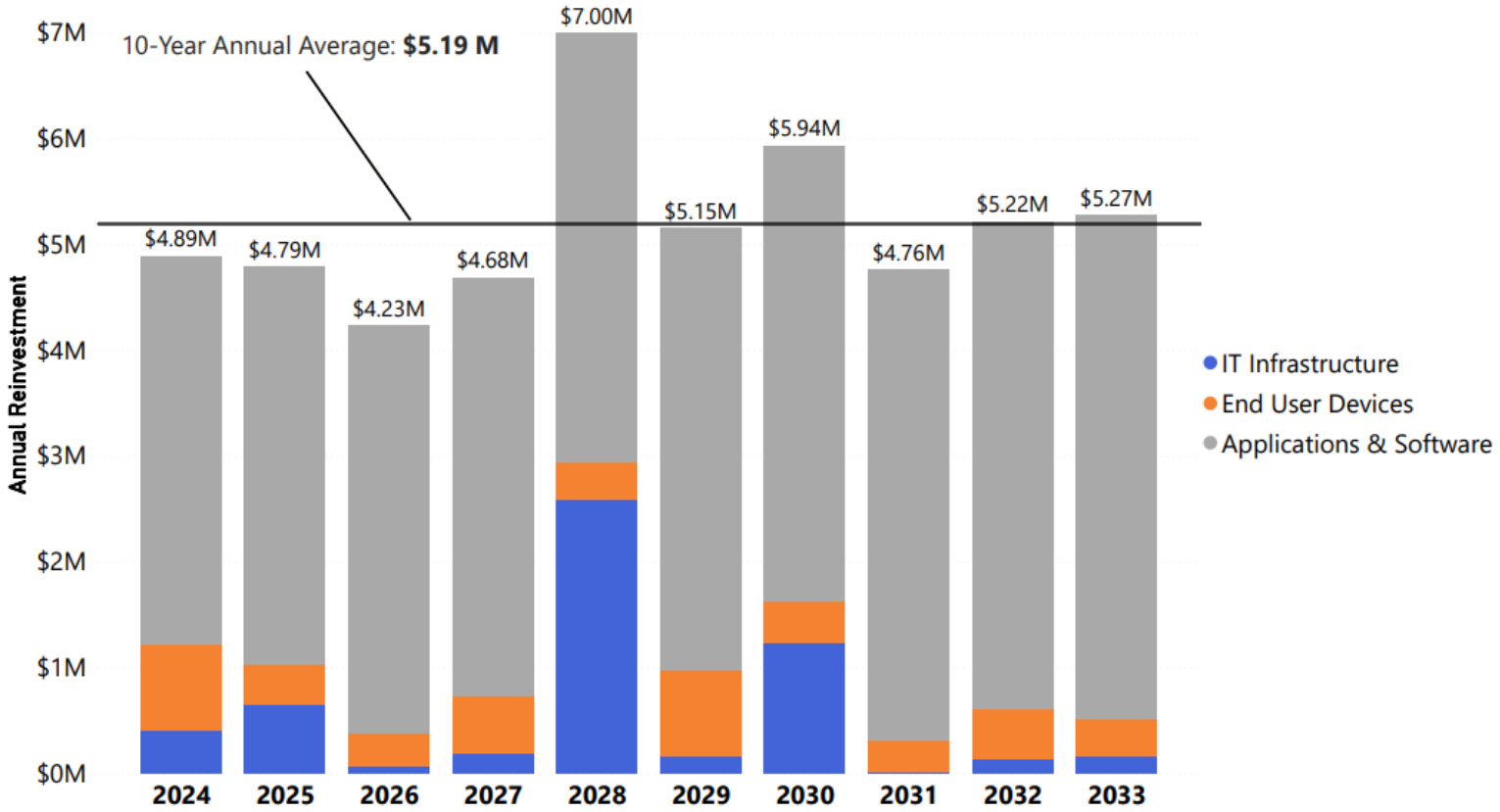
Lifecycle Type	Description of Activity	Frequency / Timing
Disposal Activities	Software – Termination of Contracts and Migration of Data to New Software Solution or Data Exportation	As required (rare occurrence)
Disposal Activities	Hardware – Assets to be Disposed of are Sent to Disposal Service	End of EUL
Expansion / Growth / Service Improvement Activities	Platform Architecture Review	Every 5 years
Expansion / Growth / Service Improvement Activities	Network Expansion (New Buildings, Service Expansion)	As required
Expansion / Growth / Service Improvement Activities	New Hardware Technology Assessment – Evaluation of Hardware Inventory to Replace Obsolete Hardware Equipment for Better Performance/Longevity	Every 5 years

3.4.2 Funding the Lifecycle Activities

Lifecycle modeling allows for the City to understand the future reinvestment needs of their existing assets by generating a theoretical asset replacement forecast that considers available asset inventory data. The age, EUL, replacement cost, condition, and risk score of each asset can be leveraged within the lifecycle model to proactively plan for reinvestment over a period of time. Asset replacement forecasts within this subsection estimate the required reinvestment for assets over the next 10 years based on available asset inventory data.

There is an approximate total of **$51.9 million** to be reinvested into the IS&T assets owned by the City over the next 10 years. This translates to a 10-year annual average of approximately **$5.19 million per year**, as presented in **Figure 3-7**.

Figure 3-7: 10-Year Capital Reinvestment Needs - IS&T

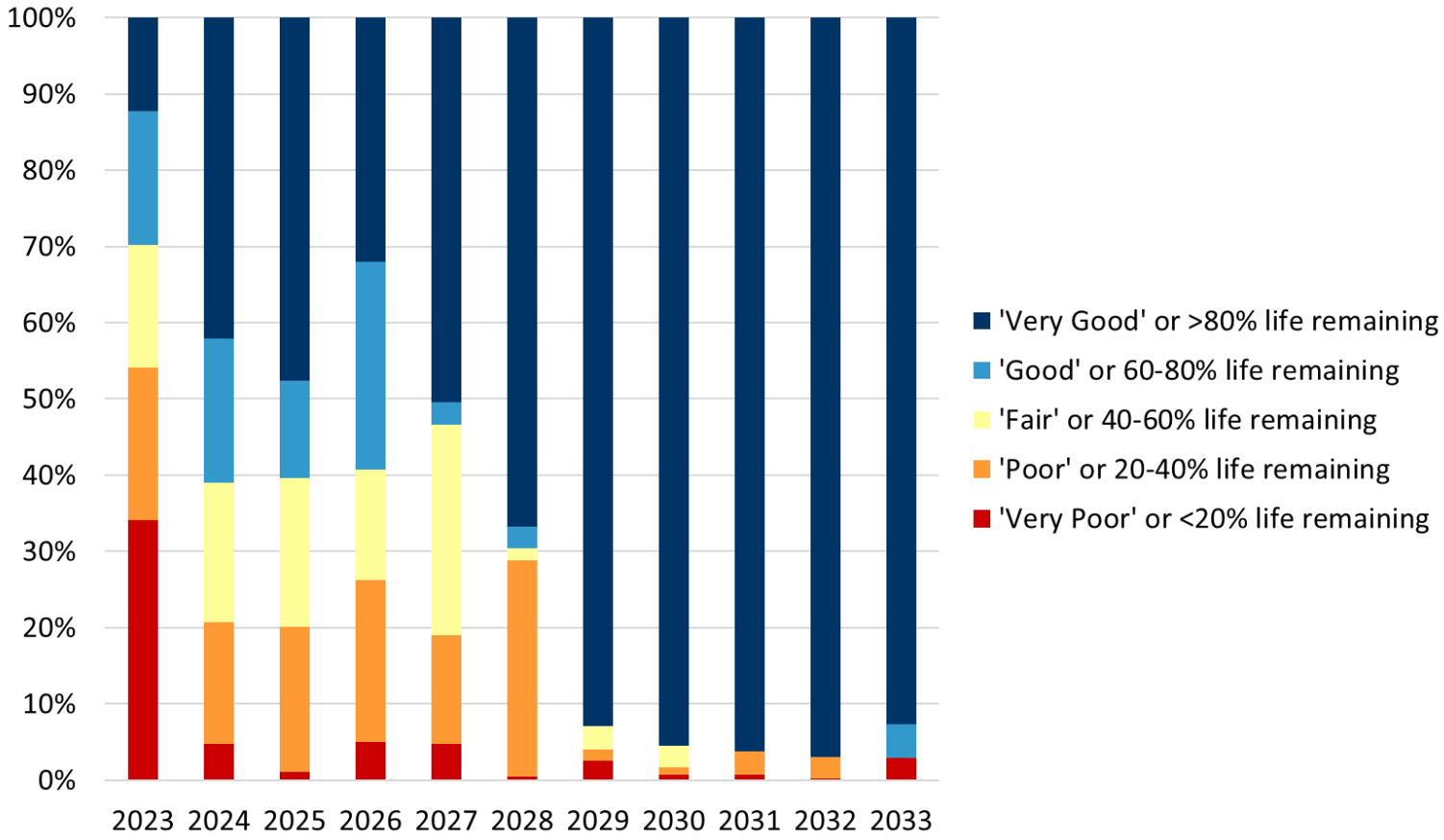


It is important to note that forecasting in this lifecycle model relies heavily on age and EUL to determine renewal or replacement needs. Applications & Software carry the most significant lifecycle costs, which is attributed to annual costs of purchasing, licensing, maintenance, and updates.

The LOS defined in the AMP includes maintaining assets in poor or better condition (52%). This LOS definition does not apply to digital applications and software assets that do not exhibit a physical condition. From the lifecycle model, the percentage of physical IS&T assets in poor or better condition fluctuates throughout the next 10-years, reaching 100% in 2028 and 2032. For IS&T assets, 97% of assets are expected to be in poor or better condition as of 2033.

Figure 3-8 shows an overview of physical IS&T asset conditions (i.e., excluding digital Applications & Software assets) throughout the next 10 years based on the lifecycle model.

Figure 3-8: Condition Overview by Year Based on Lifecycle Model - IS&T



4.0 Parking Equipment, Lots, & Structures

The City's Parking Operations team manages and oversees the operation of street parking and City-owned parking lots and structures throughout the City. This includes a network of single space parking meters, multi-space pay stations, and a portfolio of surface lots and parking garages. The following chapter of the AMP includes assets that are under the Parking Equipment, Lots, & Structures area.

It is important to note that two parking garages, the Hanson Parking Garage and the Chown Parking Garage, are not included in the AMP as they are featured in the Facilities AMP. However, the only parking structure asset included in this AMP is the structural concrete of the Robert Bruce Parking Garage. For 2025 reporting, all parking garages will be reported together.

The City’s Facilities Management & Construction Services (FMCS) department is comprised of three divisions: Facilities Management, Energy & Asset Management, and Facilities Construction. FMCS maintains the City’s diverse portfolio of municipal buildings, thereby supporting departments such as Parking Operations in providing extensive front-line services to the community. This centralized, shared services collaborative approach has allowed the integration of energy management and sustainability considerations along with other aspects of facilities maintenance, asset management, space planning, design, construction, and demolition across all areas of the city.

Note on Scope: At the time of preparing this AMP, no data was available for specific Information & Technology assets related to Parking Equipment, Lots, & Structures including payment transaction software and associated IT infrastructure. Information is now available and will be present in subsequent reports.

4.1 State of the Local Infrastructure

4.1.1 Asset Inventory and Valuation

Parking Equipment, Lots, & Structures assets provide designated parking for residents and visitors. The asset classes, asset types, a count of assets therein, and the total replacement cost (in 2023 dollars) are shown in **Table 4-1**. The overall replacement cost (2023 dollars) is **$14.1 million** for **470 assets** included in the inventory.

Table 4-1: Inventory Summary by Asset Type - Parking Equipment, Lots, & Structures

Asset Class	Asset Type	Count	Total Replacement Cost (2023)
Surface Lots	Asphalt Paved Surfaces	17	$7,038,400
Surface Lots	Gravel Surfaces	2	$92,800
Surface Lots	Concrete Curb and Sidewalk	1	$34,800
Surface Lots	Asphalt Walkway	1	$15,300
Surface Lots	Exterior Site Stairs – Concrete	2	$26,200
Surface Lots	Guardrails and Barriers	9	$255,200
Surface Lots	Line Marking and Sealants	17	$50,300
Surface Lots	Miscellaneous structures and Equipment	9	$1,004,100
Surface Lots	Parking Stops	16	$450,900

Parking Equipment, Lots, & Structures

Asset Class	Asset Type	Count	Total Replacement Cost (2023)
Surface Lots	Planters – Concrete	1	$2,200
Surface Lots	Pole Light Fixtures	10	$495,700
Surface Lots	Storm Sewer	4	$98,800
Surface Lots	Vehicle Bollard (Limiting Device)	6	$82,500
Parking Structures	Structural Concrete	1	$1,305,000
Equipment	Pay and Display Station	242	$2,904,000
Equipment	Single Space Parking Meter	132	$237,600
Overall	**N/A**	**470**	**$14,093,800**

4.1.2 Asset Age Summary

The average age, average condition, expected useful life, and average remaining useful life of the assets in the Surface Lots, Parking Structures, and Equipment asset classes are summarized in **Table 4-2**. The overall average age is 15 years, with average remaining useful life of five years.

Table 4-2: Average Age, Average Condition, Expected Useful Life, and Average Remaining Useful Life - Parking Equipment, Lots, & Structures

Asset Class	Asset Type	Average Age (Years)	Average Condition Grade	Expected Useful Life (Years)	Average Remaining Useful Life (Years)
Surface Lots	Asphalt Paved Surfaces	65	Fair	25	11
Surface Lots	Gravel Surfaces	Unknown	Very Poor	15	3
Surface Lots	Concrete Curb and Sidewalk	54	Poor	50	13
Surface Lots	Asphalt Walkway	Unknown	Poor	25	6
Surface Lots	Exterior Site Stairs – Concrete	104	Fair	50	28
Surface Lots	Guardrails and Barriers	58	Poor	20	7
Surface Lots	Line Marking and Sealants	71	Very Poor	3	0
Surface Lots	Miscellaneous Structures and Equipment	104	Fair	40	15
Surface Lots	Parking Stops	77	Poor	20	9
Surface Lots	Planters – Concrete	Unknown	Fair	50	23
Surface Lots	Pole Light Fixtures	90	Good	25	15
Surface Lots	Storm Sewer	83	Good	50	38
Surface Lots	Vehicle Bollard (Limiting Device)	71	Good	30	18

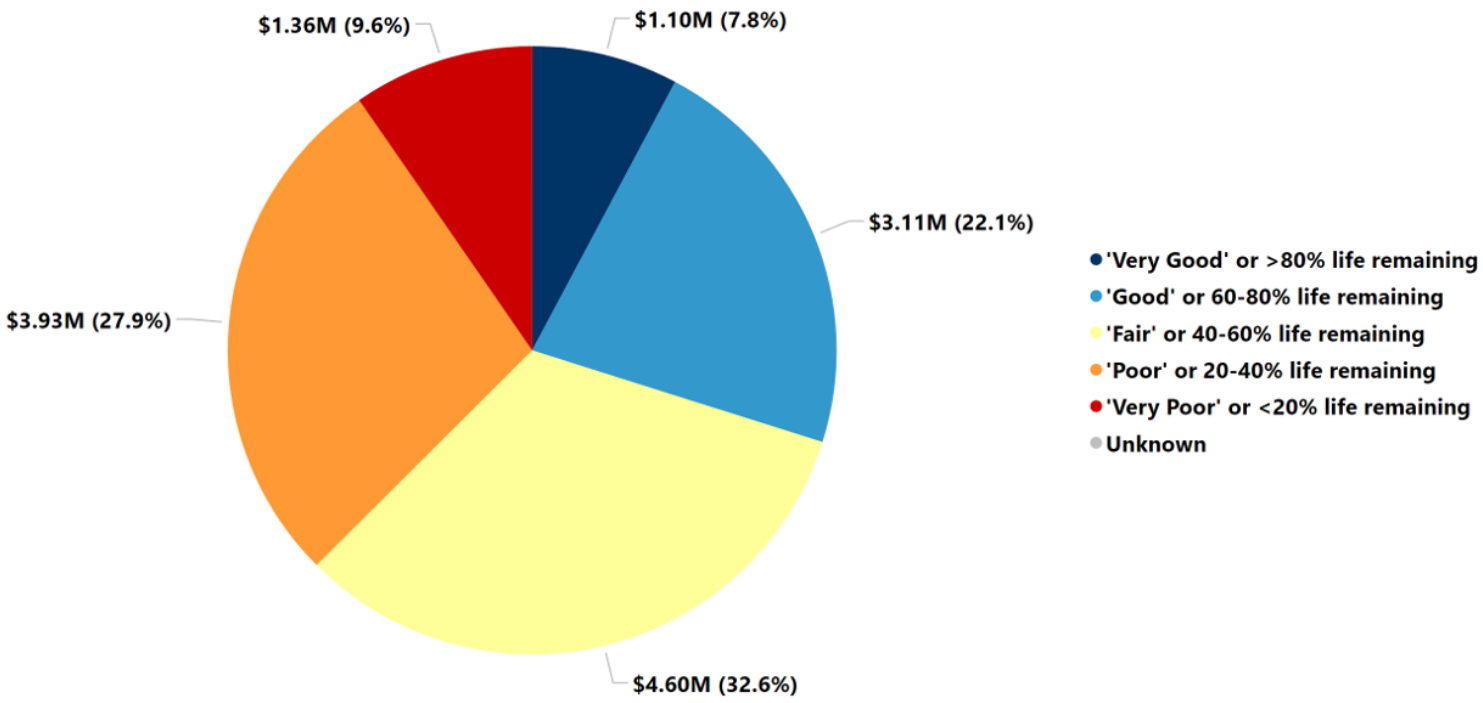
Parking Equipment, Lots, & Structures

Asset Class	Asset Type	Average Age (Years)	Average Condition Grade	Expected Useful Life (Years)	Average Remaining Useful Life (Years)
Parking Structures	Structural Concrete	54	Very Poor	50	13
Equipment	Pay and Display Station	3	Fair	8	5
Equipment	Single Space Parking Meter	18	Very Poor	10	0
Overall	**N/A**	**14**	**Fair**	**3 to 50**	**13**

4.1.3 Asset Condition

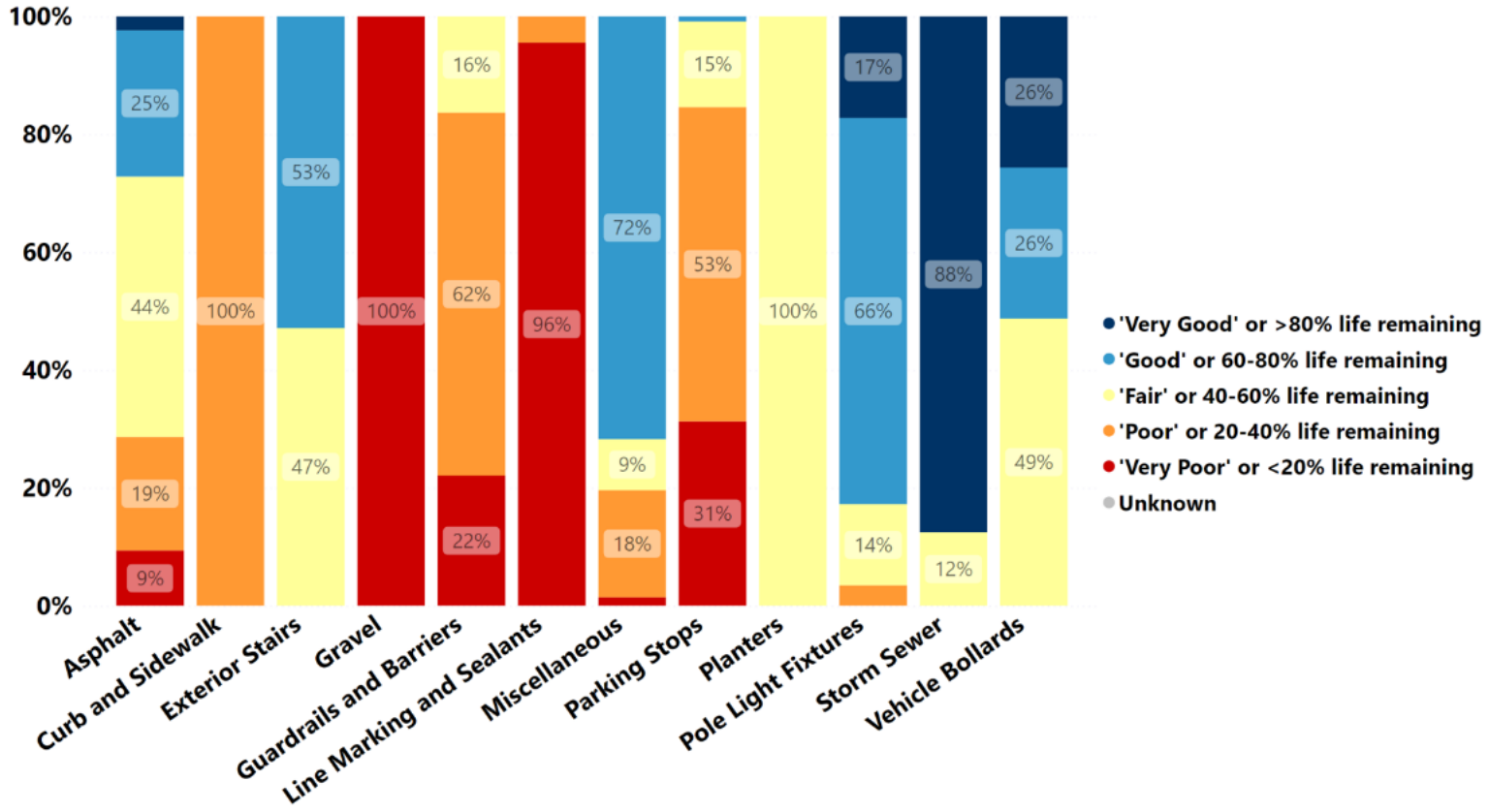
An overall condition summary for assets under the Parking Equipment, Lots, & Structures service area by replacement cost (in 2023 dollars) is shown in **Figure 4-1**. Over half of the asset are in fair to very good condition (63%) with less than 10% in very poor condition.

Figure 4-1: Condition Summary and 2023 Replacement Cost - Parking Equipment, Lots, & Structures



A condition summary for Surface Lots is provided in **Figure 4-2** by asset type and replacement cost (in 2023 dollars). The condition of Surface Lots has been informed by the 2022 Building Condition Assessments (BCA) completed by Art Engineering, with conditions projected as of 2023 utilizing the methodology outlined in the Introduction document.

Figure 4-2: Condition Summary by Asset Type and Replacement Cost - Parking Equipment, Lots, & Structures (Surface Lots)

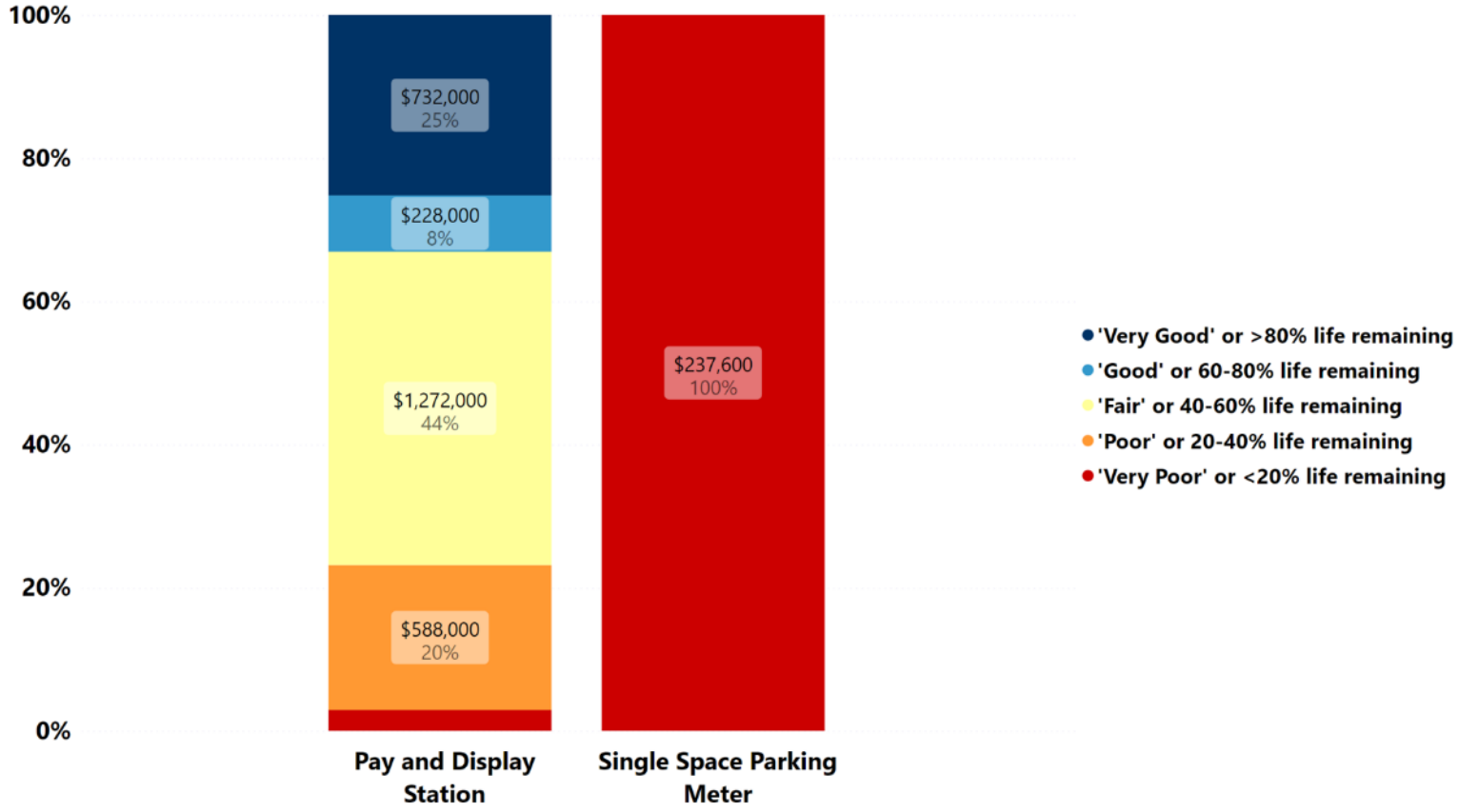


Parking Equipment, Lots, & Structures

The condition of the sole Parking Structure asset, specifically the structural concrete of the Robert Bruce Parking Garage, is considered Poor. The determined condition rating was informed by the 2022 BCAs completed by Art Engineering, adjusted to 2023 utilizing the methodology outlined in the Introduction materials which were provided under a separate document. In 2022/23 after this assessment the parking garage was significantly refurbished based on the results of the BCA, the condition would now be assessed higher. The 2022 BCAs were utilized to develop a 5 year asset management plan to address asset deficiencies, with some of the projects under way and some additional maintenance activities completed which are not reflected at this time. These updates will occur in the 2025 update.

A condition summary for Equipment is provided in **Figure 4-3** by asset type and replacement cost (in 2023 dollars). In the absence of condition assessment data, the condition of equipment has been determined based on age and expected useful life. The single space meters are being replaced with smart meters in 2024.

Figure 4-3: Condition Summary by Asset Type and Replacement Cost - Parking Equipment, Lots, & Structures (Equipment)



4.1.4 Data Sources and Confidence

Asset data for Equipment assets is maintained by the City within ArcGIS, a web-based geographical mapping solution that served as the data source for these assets in this AMP. The data source for Surface Lots and Parking Structures was the BCAs completed by Art Engineering in 2022 which included the development of an asset inventory.

Data confidence can be estimated based on the confidence level of various qualifiers and can be presented on a scale from 0% (low) to 100% (high), as shown in **Table 4-3**. The qualifiers chosen for evaluation are specifically targeted for estimating overall confidence of condition reporting within the SOLI.

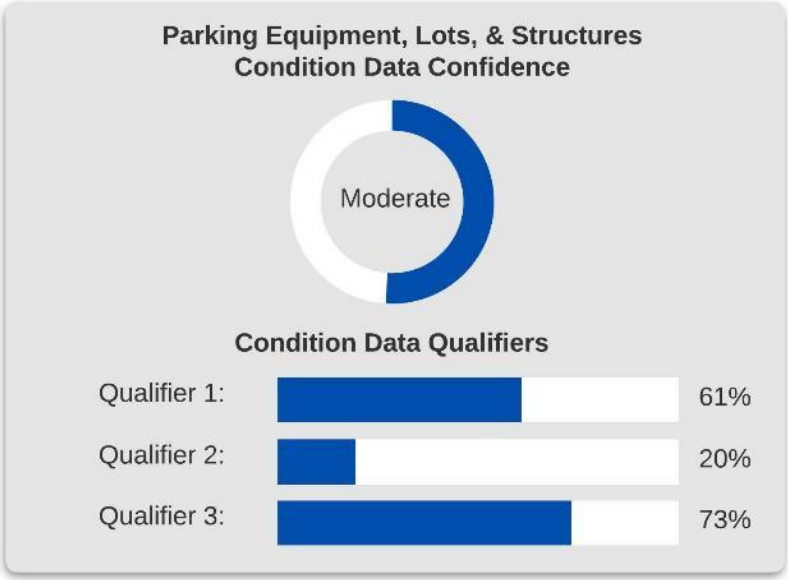
Table 4-3: Data Confidence Scale

Confidence Level	Low	Low/ Moderate	Moderate	Moderate/ High	High
Average of Qualifiers	0% - 19%	20% - 39%	40% - 59%	60% - 79%	80% - 100%

Assuming the data source is reliable, the following qualifiers were considered to estimate data confidence regarding the data utilized in the creation of this SOLI report:

- **Qualifier 1**: The percentage of assets in the asset inventory where construction, installation, or acquisition years are documented (61%);
- **Qualifier 2**: The percentage of assets in the asset inventory that have condition assessment data documented (20%); and,
- **Qualifier 3**: The percentage of the estimated overall Parking Equipment, Lots, & Structures replacement value, in 2023 dollars, attributed to assets in the asset inventory with documented condition assessment data (i.e., condition is not solely age-based) (73%).

Figure 4-4: SOLI Report Data Confidence – Parking Equipment, Lots, & Structures



As summarized in **Figure 4-4**, the overall asset condition data confidence for Parking Equipment, Lots, & Structures assets are Moderate. Data confidence can be increased by improving the quality of the data and/or filling in data gaps. The largest data gap at the time of this AMP pertains to single space parking meters, where the installation dates are unknown, and no condition assessment history is documented limiting the condition reporting for the SOLI report.

4.2 Levels of Service

The City has developed the community and technical LOS, based on input from staff. It was decided that Availability and Quality were key attributes in gauging the performance of the assets. **Table 4-4** and **Table 4-5** outline the City's current community and technical levels of service for Parking Equipment, Lots, and Structures.

Table 4-4: Community LOS - Parking Equipment, Lots, & Structures

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Availability	Adequate parking for short-term parking	Number of hourly/daily metered on-street spaces Number of hourly/daily spaces in garages/lots	On-street metered spaces – 1,872 Off-street metered spaces –1,496
Availability	Adequate parking for long-term parking	Number monthly permit spaces available in garages/lots Number of monthly permit spaces available on-street	Permit spaces – 860 Spaces Available - 106 Permit spaces on-street – 1,642 Spaces Available – 1,142

Table 4-5: Technical LOS - Parking Equipment, Lots, & Structures

LOS Parameter	LOS Statement	Performance Measure	Current LOS (2023)
Quality	Equipment and assets are kept in good working condition	Percentage of assets that are meeting condition performance objectives	94%

4.3 Risk Assessment

The risk ratings for Parking Equipment, Lots, & Structures assets included Surface Lots, Parking Structures and Equipment. The risk scores were calculated using the risk methodology and approach outlined in the Introduction. **Table 4-6** summarizes the risk factors for Parking, Equipment, Lots & Structure assets.

Table 4-6: Risk Factors - Parking Equipment, Lots, & Structures

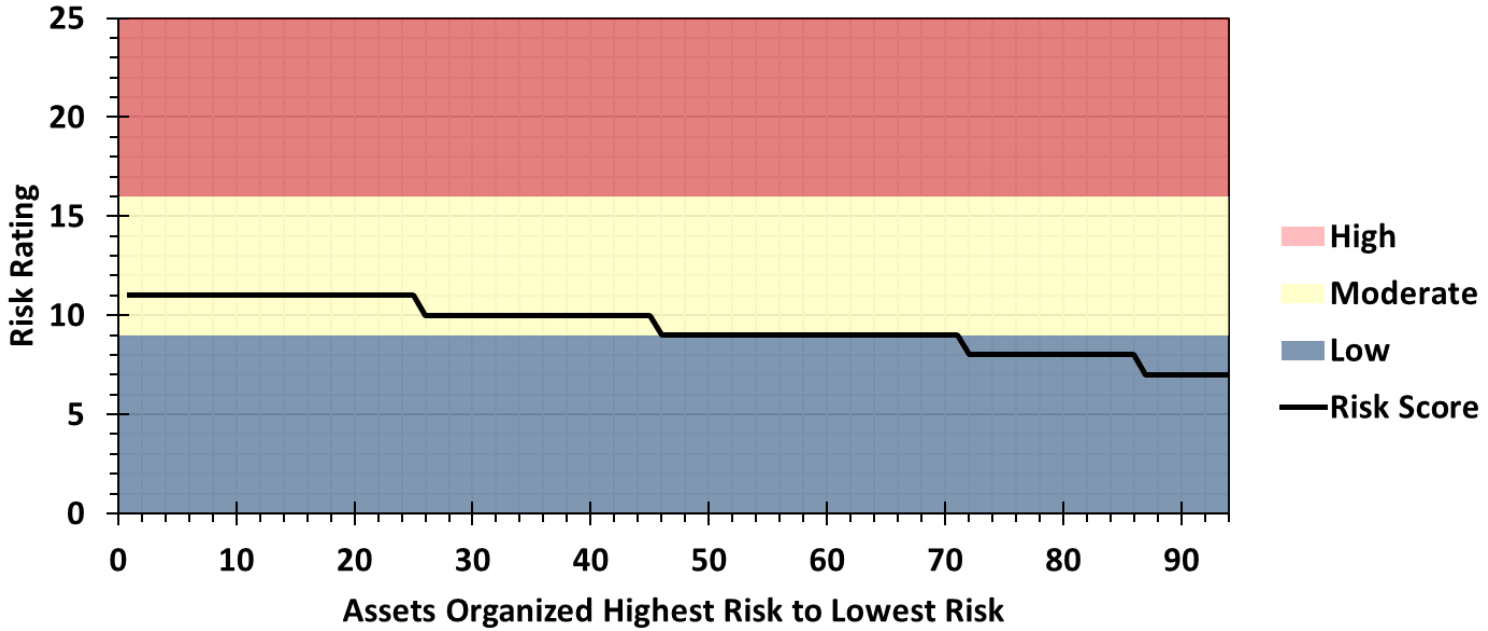
Factors	Risk Ratings
A - Condition	The condition of the assets was determined either by visual or age-based and can be found in the SOLI section of the AMP.
B - Performance	The performance of all the asset classes was determined to be "always reliable" and assets were assigned a rating of 1 for calculating risk score.
C - Climate Change	The climate change ratings were determined at the asset class level by identifying climate change hazard interactions. The Surface Lots were identified as a “high” risk and assigned a rating of 5 when calculating the risk score, while both the Parking Structures and Equipment were identified as a “low” climate risk and assigned a rating of 1 for calculating risk.
D - Impact	The impact of all the asset classes was identified as “moderate” impact and assets were assigned a rating of 1 for calculating risk.
E - Importance	A “high” importance rating was given to the Parking Structures assets and a rating of 3 was assigned for calculating risk score. The Surface Lots and Equipment asset classes were identified as “moderate” importance and assigned a rating of 2 when calculating risk.

The individual risk ratings were used in calculating the risk score for each of the assets.

4.3.1 Risk Profile

The Risk profile of the assets associated with Surface Lots is displayed in **Figure 4-5.** Of the assets tracked within the asset inventory, approximately 75% (71) are classified as Moderate risk. These assets are considered moderate priorities for the implementation of lifecycle activities and possible replacement. The remaining assets are considered Low risk.

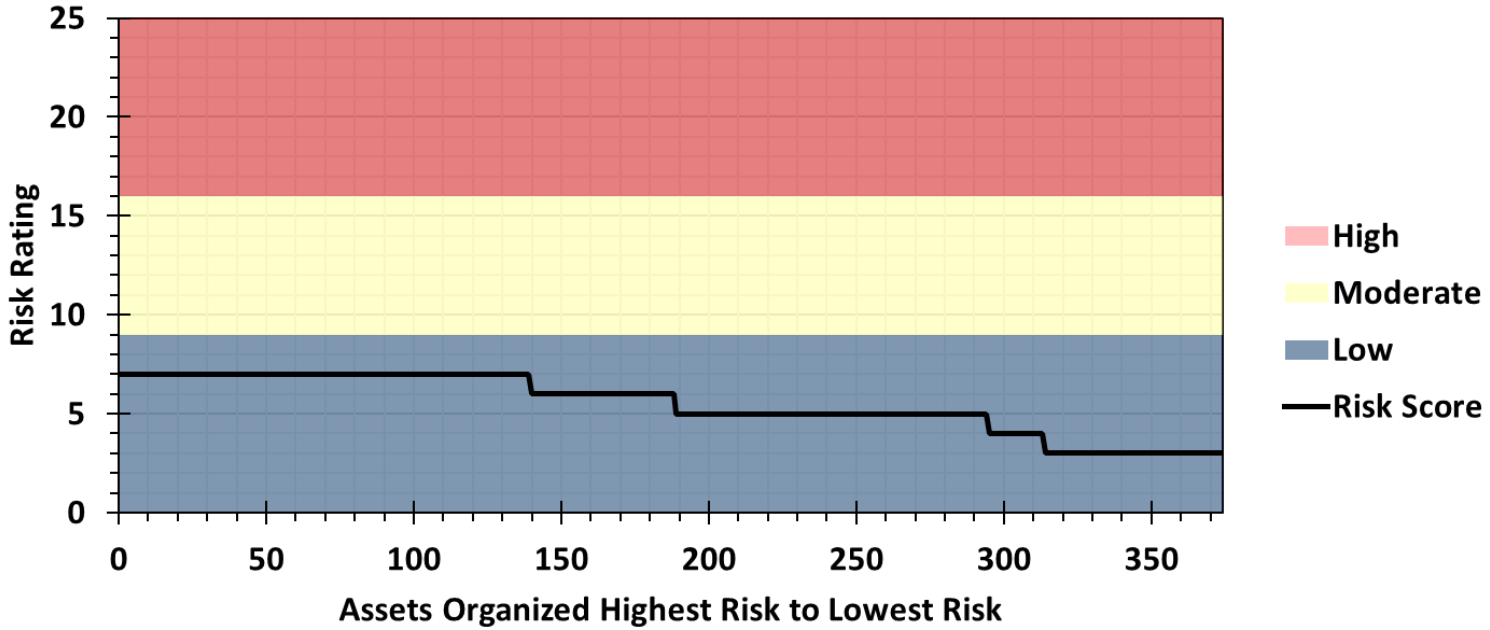
Figure 4-5: Risk Profile - Parking Equipment, Lots, & Structures – (Surface Lots)



The Parking Structures asset has a risk score of 8, resulting in a Low risk.

The Risk profile of the Equipment assets is displayed in **Figure 4-6**. All 374 Equipment assets tracked in the asset inventory are considered as Low risk.

Figure 4-6: Risk Profile - Parking Equipment, Lots, & Structures (Equipment)



4.4 Asset Management Strategy

4.4.1 Lifecycle Activities – Parking Equipment, Lots & Structures

The lifecycle activities considered include:

- **Non-Infrastructure Solutions**: Actions or policies that can lower costs and extend useful lives.
- **Maintenance Activities**: Regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events.
- **Renewal / Rehabilitation Activities**: Significant repairs designed to extend the life of the asset.
- **Replacement / Construction Activities**: Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehabilitaton is no longer an option.

- **Disposal Activities**: Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed.
- **Expansion / Growth / Service Improvement Activities**: Planned activities required to extend services to previously unserved areas or expand services to meet growth demands.

Table 4-7 describes the lifecycle activities that can be implemented within the asset management strategy for Parking Equipment, Lots, & Structures. The lifecycle activities presented below are existing activities performed by the city and were identified during a workshop with City staff in January 2024.

Table 4-7: Lifecycle Activities - Parking Equipment, Lots, & Structures

Lifecycle Type	Description of Activity	Frequency / Timing
Non-Infrastructure Activities	Parking Lot Assessments	Every 5 years
Non-Infrastructure Activities	Parking Studies & Review (ie: Hospital spots)	Every 5 to 7 years
Non-Infrastructure Activities	Accessibility parking space needs	As requested by public
Maintenance Activities	Inspections and Maintenance of Garages and Lots	Daily
Maintenance Activities	Scheduled Maintenance of Elevators in Garages	Monthly
Maintenance Activities	Routine Maintenance of Parking Meters and Garage Equipment	Semi-annually

Parking Equipment, Lots, & Structures

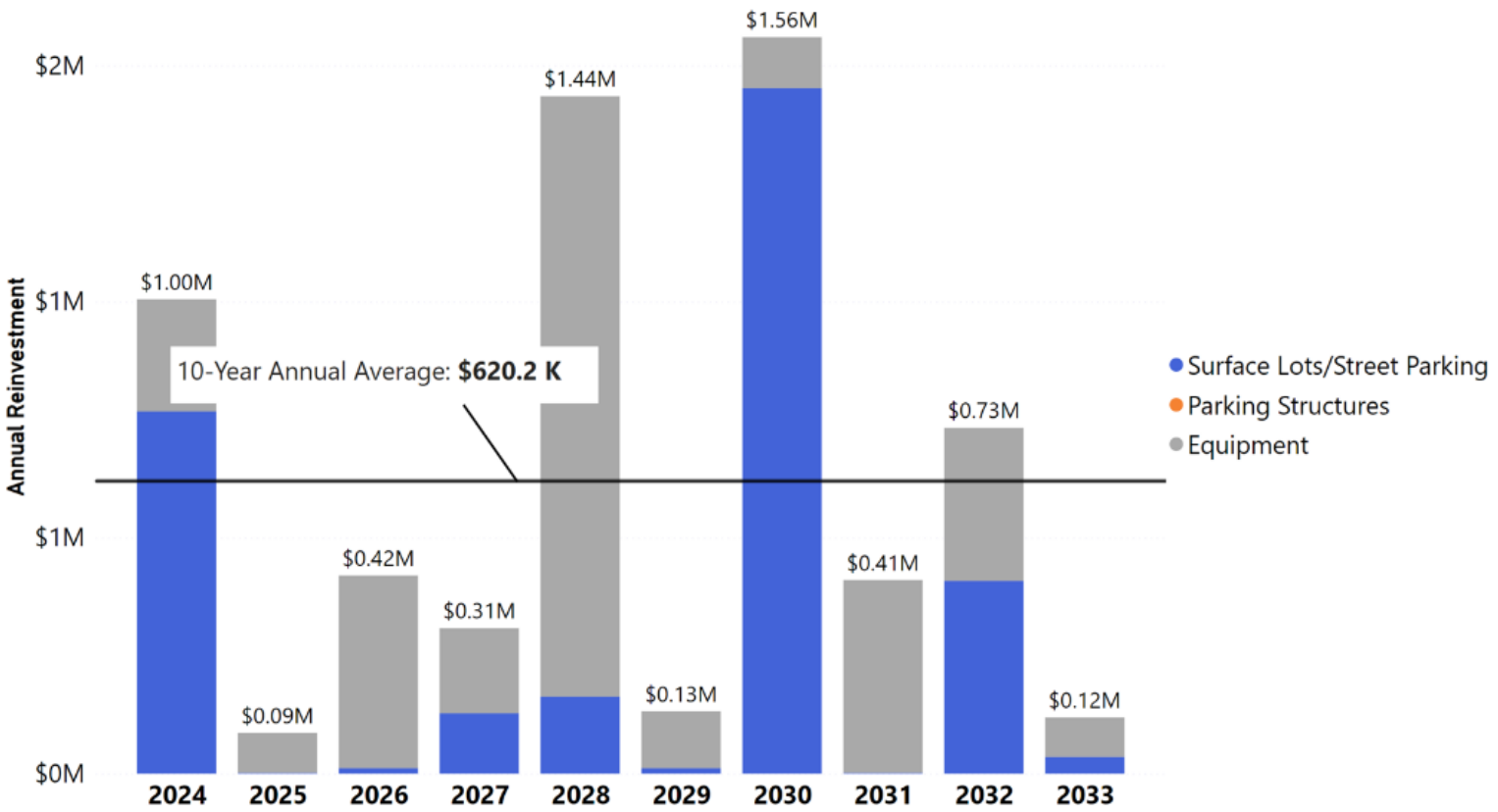
Lifecycle Type	Description of Activity	Frequency / Timing
Renewal / Rehabilitation Activities	Garages – Proactive Sealant Replacement and Waterproofing	Every 8 to 10 years
Renewal / Rehabilitation Activities	Lots – Proactive Inspections for Potholes and Asphalt Repairs, Grading done on gravel lots	Every spring
Replacement / Construction Activities	Replacement of Assets	End of EUL
Disposal Activities	Recycling of Equipment	End of EUL
Expansion / Growth / Service Improvement Activities	Review of Parking Rates and Services	Every 5 to 7 years
Expansion / Growth / Service Improvement Activities	Expansion of Mobile Payment Technology to All Metered Areas in the City	2024

4.4.2 Funding the Lifecycle Activities

Lifecycle modeling allows for the City to understand the future reinvestment needs of their existing assets by generating a theoretical asset replacement forecast that considers available asset inventory data. The age, EUL, replacement cost, condition, and risk score of each asset can be leveraged within the lifecycle model to proactively plan for reinvestment over a period of time. Asset replacement forecasts within this subsection estimate the required reinvestment for assets over the next 10 years based on available asset inventory data.

There is an approximate total of **$6.2 million** to be reinvested into the Parking Equipment, Lots, & Structures assets owned by the City in the next 10 years. This translates to a 10-year annual average of approximately **$620.2 thousand**, as presented in **Figure 4-7**.

Figure 4-7: 10-Year Capital Reinvestment Needs- Parking Equipment, Lots, & Structures



It is important to note that forecasting in this lifecycle model relies heavily on age and EUL to determine renewal or replacement needs and that further tracking of condition data for Parking Equipment, Lots, & Structures assets will assist at refining forecasted expenditures in the decades to come. Currently, the condition of 132 single space parking meters is not known with great certainty without age or condition data. However, the single space parking meters are planned to be replaced with smart meters in early 2024 as they are at the end of their useful life resulting in their exclusion from the lifecycle model.

The LOS defined in this AMP includes maintaining the current portion of assets in poor or better condition (92%). From the lifecycle model, the percentage of Parking Equipment, Lots, & Structures in poor or better condition fluctuates throughout the next 10 years, reaching a high of 98% in 2024 and concluding at 66% in 2033.

Figure 4-8 shows a condition overview of Parking Equipment, Lots, & Structures throughout the next 10 years based on the lifecycle model.

Figure 4-8: Condition Overview by Year Based on Lifecycle Model - Parking Equipment, Lots, & Structures