



2024 Asset Management Plan

Fleet and Transit
Non-Core Assets
City of Brantford, Ontario



RECORD SHEET

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ASSET MANAGEMENT PLAN FLEET & TRANSIT SERVICES

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FLEET AND TRANSIT INTRODUCTION

Per O. Reg. 588/17 all municipal infrastructure assets which fall outside of the core asset categories (water, wastewater and stormwater) and their respective subcategories, shall be non-core or “other” infrastructure assets. These assets shall have qualitative descriptions and technical metrics established by the municipality.

Table 1 below outlines which Asset Types are included under each Asset Class, and will be reported on in this AMP. In addition, it is important to note that the AMP only includes assets owned by the City or Local Boards and does not include assets that are owned privately or by other organizations.

Fleet Facilities are included within the Facilities Asset Management Plan.

Table 1: Asset Type Breakdown

	Asset Class	
	Fleet	Transit Services
Asset Type:	Light-Duty Vehicles	Bus Signage
	Heavy-Duty Vehicles	Bus Shelters
	Transit Buses	Bus Pads
	Off-Road Vehicles	
	Accessories and Peripherals	

1. FLEET

1.1. INTRODUCTION

The City of Brantford owns and maintains several assets under the Fleet asset class. The purpose of this section is to present specific information about the Fleet asset class to answer the questions posed in **Section 2** of the **Asset Management Plan (AMP) Overview Document**, and includes the following:

- Fleet Assets' Data Inventory and Condition Approach;
- Summary of Fleet Assets;
- Lifecycle Activities and Cost of Fleet Assets;
- Current Fleet Assets' Levels of Service;
- Current Fleet Assets' Performance; and
- Conclusion.

1.2. FLEET ASSETS' DATA INVENTORY AND CONDITION APPROACH

Information related to the City's data collection methodologies as well as data confidence level definitions are defined in the **Asset Management Plan Overview Document**.

The City of Brantford currently has two (2) different approaches to establishing the condition for Fleet assets due to available resources, technologies, and budget restrictions:

- Regular inspection programs conducted by City staff; and
- Estimated condition based on asset specific information.

A list of all condition assessments for all core assets can be found in **Table 7** in the **Asset Management Plan Overview Document**.

The origin of the Fleet asset data for inventory, replacement cost, and condition, as well as data confidence in each are provided in **Table 2** below.

Table 2: Fleet Assets' Data Origin and Confidence Level

	Inventory			Replacement Cost			Condition		
Asset Type	Inventory (incl. Quantity and Age) From	Data Confidence Level	Data Confidence Description	Replacement Cost From	Data Confidence Level	Data Confidence Description	Condition From	Data Confidence Level	Data Confidence Description
Light-Duty Vehicles	TCA List from City Finance Department	High	Formal inventory with few unknowns.	TCA List from City Finance Department	Medium	Formal inventory with dated costing.	Determined based on age.	Medium	Informal assessment based on assumptions from age of assets
Heavy-Duty Vehicles	TCA List from City Finance Department	High	Formal inventory with few unknowns.	TCA List from City Finance Department	Medium	Formal inventory with dated costing.	Determined based on age.	Medium	Informal assessment based on assumptions from age of assets
Transit Buses	TCA List from City Finance Department	High	Formal inventory with few unknowns.	TCA List from City Finance Department	Medium	Formal inventory with dated costing.	Determined based on age.	Medium	Informal assessment based on assumptions from age of assets
Off-Road Vehicles	TCA List from City Finance Department	High	Formal inventory with few unknowns.	TCA List from City Finance Department	Medium	Formal inventory with dated costing.	Determined based on age.	Medium	Informal assessment based on assumptions from age of assets
Accessories and Peripherals	TCA List from City Finance Department	High	Formal inventory with few unknowns.	TCA List from City Finance Department	Medium	Formal inventory with dated costing.	Determined based on age.	Medium	Informal assessment based on assumptions from age of assets

Per **Table 2** above, Fleet assets' inventory and condition data are typically at a Medium to High confidence level with an overall average confidence level of Medium.

Inventory data related to Fleet assets is at a High confidence level due to formal inventories that are completed by staff and reviewed regularly, as well as regular inspections of assets.

Replacement cost data is typically at a Medium confidence level, as cost are estimated based on original assets costs and adjusted to current year prices. Additionally, replacement cost estimates were further refined to account for economic and supply chain issues that continue to affect the industry due to the COVID-19 pandemic. These variable market conditions affect the confidence of the replacement cost estimates.

Condition data related to Fleet assets is at a Medium confidence level, as the condition of these assets is estimated based on age and service life assumptions by City staff.

Improvements to the inventories and inspection programs will be ongoing as a result of the AIM project explained in **Section 7** of the **Asset Management Overview document**.

1.2.1. SERVICE LIFE

Where condition assessments have not been completed, the condition has been estimated based on the estimated service life of the asset shown below in **Table 3**. The average overall estimated service life for assets can be found in **Table 5**.

Table 3: Fleet Assets' Estimated Service Life

Asset	Estimated Service Life
Light-Duty Vehicles	7 years
Heavy-Duty Vehicles	10 years
Transit Buses	14 years for Brantford Transit Buses 7 years for Brantford Lift Buses
Off-Road Vehicles	15 years
Accessories and Peripherals	15 years

1.2.2. CONDITION SCORING

For the purpose of this report and standardizing condition scores across all assets in the Asset Management Plan, the Condition Rating is defined by three (3) Condition Scores as defined in the table below. For assets with formal consultant condition assessments, the conditions have been modified to fit into this model.

Table 4: Condition Score Description

Condition Score	Condition Rating	Description
1 - 1.4	Good	Assets are in working order, have no or minor deficiencies. Where condition data is not available, this category applies to assets which are within the first 40% of their estimated service life.
1.5 - 2.4	Fair	Assets show general signs of deterioration, some elements may have significant deficiencies, and asset will likely require repairs in the next 10 years. Where condition data is not available, this category applies to assets which are within 41% - 80% of their estimated service life.
2.5 - 3	Poor	Asset is below standard showing signs of significant deterioration, is in danger of imminent failure, and will require repair or replacement within the next year. Where condition data is not available, this category applies to assets which have exceeded 80% of their estimated service life.

1.3. SUMMARY OF FLEET ASSETS

The summary of assets for the Fleet Asset Class can be found below. The summary of assets includes: Quantity, Replacement Cost, Average Age, and Average Condition Score for each asset type in accordance with O. Reg. 588/17.

1.3.1. TOTAL SUMMARY OF ASSETS

A table summarizing all Fleet assets is included in

Table 5 below. Detailed information about each asset is included in individual sections. Calculations of averages have been weighted by the overall replacement value of assets; this means that assets of higher estimated replacement value will have a stronger influence on the average than if the average was calculated based on the number of assets.

The total replacement cost for all Fleet assets is approximately \$68.4M and they are an average of 9 years old, which is 75% of the overall average estimated service life of 12 years. The average condition scores are shown to one decimal place to illustrate how close the scores are to being on a cusp of another rating and were used to calculate the weighted overall average condition score for the asset group, but are shown rounded to the nearest whole number in subsequent sections. Overall, Fleet assets are in Fair condition with a weighted average condition score of 2.3.

Table 5: Total Summary of Fleet Assets

Asset	Quantity	Unit	Replacement Cost	Weighted Average Age (years)	Weighted Average Estimated Service Life (years)	% of Estimated Service Life Expended	Weighted Average Condition Score	Weighted Average Condition Description
Fleet Assets Total			\$68.4M	9	12	75%	2.3	FAIR
Light-Duty Vehicles	127	ea	\$9.5M	8	7	100%	2.9	POOR
Heavy-Duty Vehicles	51	ea	\$20.9M	10	10	100%	2.7	POOR
Transit Buses	48	ea	\$23.6M	8	13	62%	2.1	FAIR
Off-Road Vehicles	96	ea	\$9.6M	8	15	53%	1.7	FAIR
Accessories and Peripherals	80	ea	\$4.8M	10	15	67%	2.1	FAIR

1.3.2. LIGHT-DUTY VEHICLES

Light-duty vehicles are utilized across multiple City of Brantford departments, and are comprised of five (5) smaller subsets by vehicle type: EV, SUV, Truck, Utility and Van. Per **Figure 1** below, the total replacement costs for the Light-Duty Vehicle assets is \$9.5M and the assets are typically in Poor condition, with an average condition score of 3.

It should be noted that vehicles are categorized in Poor condition when their average age exceeds 80% or more of their estimated service life; however, this does not mean that the vehicles are unsafe to operate. City vehicles undergo regular maintenance to ensure they are safe to operate on City roadways.

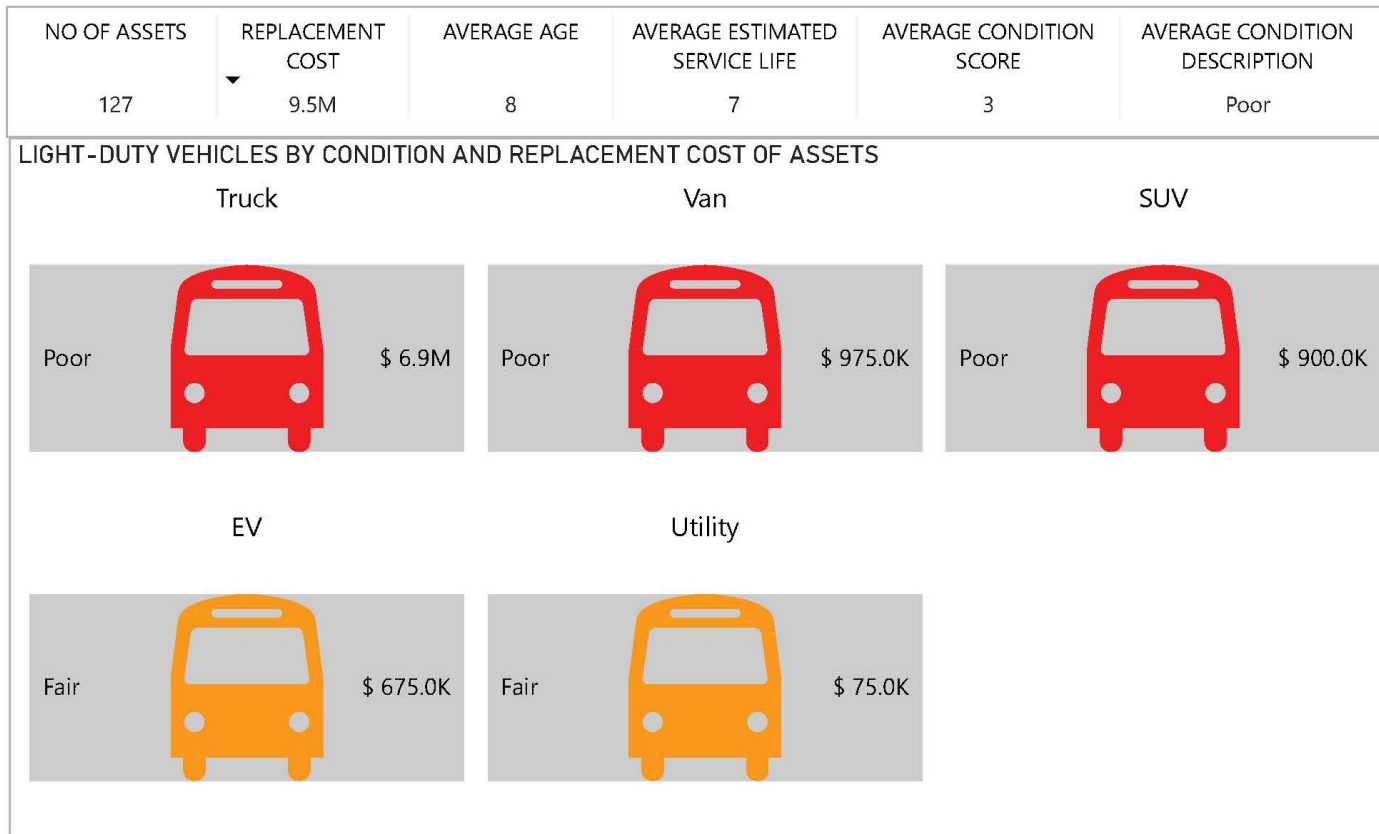


Figure 1: Light-Duty Vehicle Asset Summary

1.3.3. HEAVY-DUTY VEHICLES

Heavy-duty vehicles are utilized across multiple departments in the Public Works commission, and are comprised of three (3) smaller subsets by vehicle type: Heavy Construction Equipment, Truck, and Utility. Per **Figure 2** below, the total replacement cost for the Heavy-Duty Vehicle assets is \$20.9M and the assets are typically in Poor condition, with an average condition score of 3.

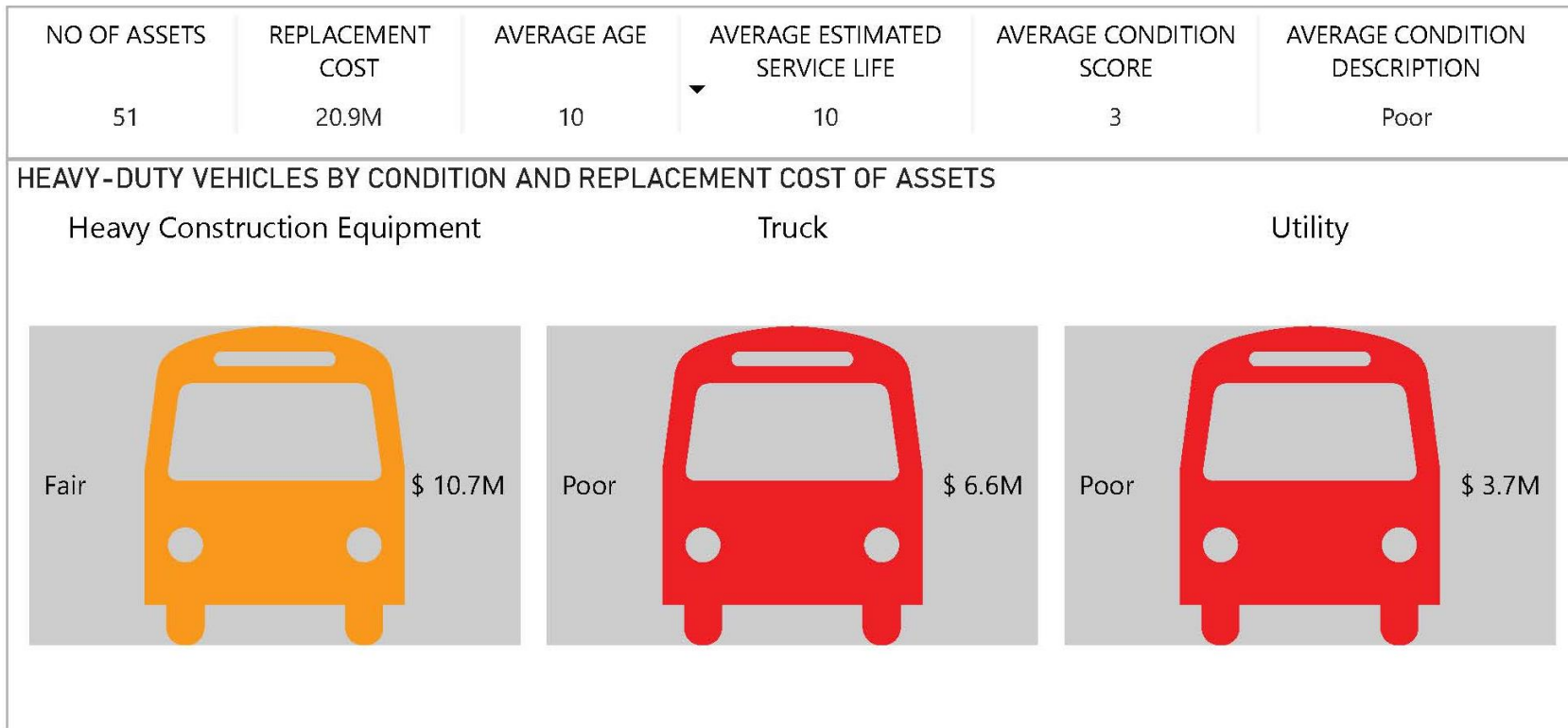


Figure 2: Heavy-Duty Vehicle Asset Summary

1.3.4. TRANSIT BUSES

Transit Buses are utilized by Fleet and Transit Services, and are comprised of two (2) smaller subsets by vehicle type: Brantford Transit Buses, and Brantford Lift Buses. Per **Figure 3** below, the total replacement cost for the Transit Buses assets is \$23.6M and the assets are typically in Fair condition, with an average condition score of 2.

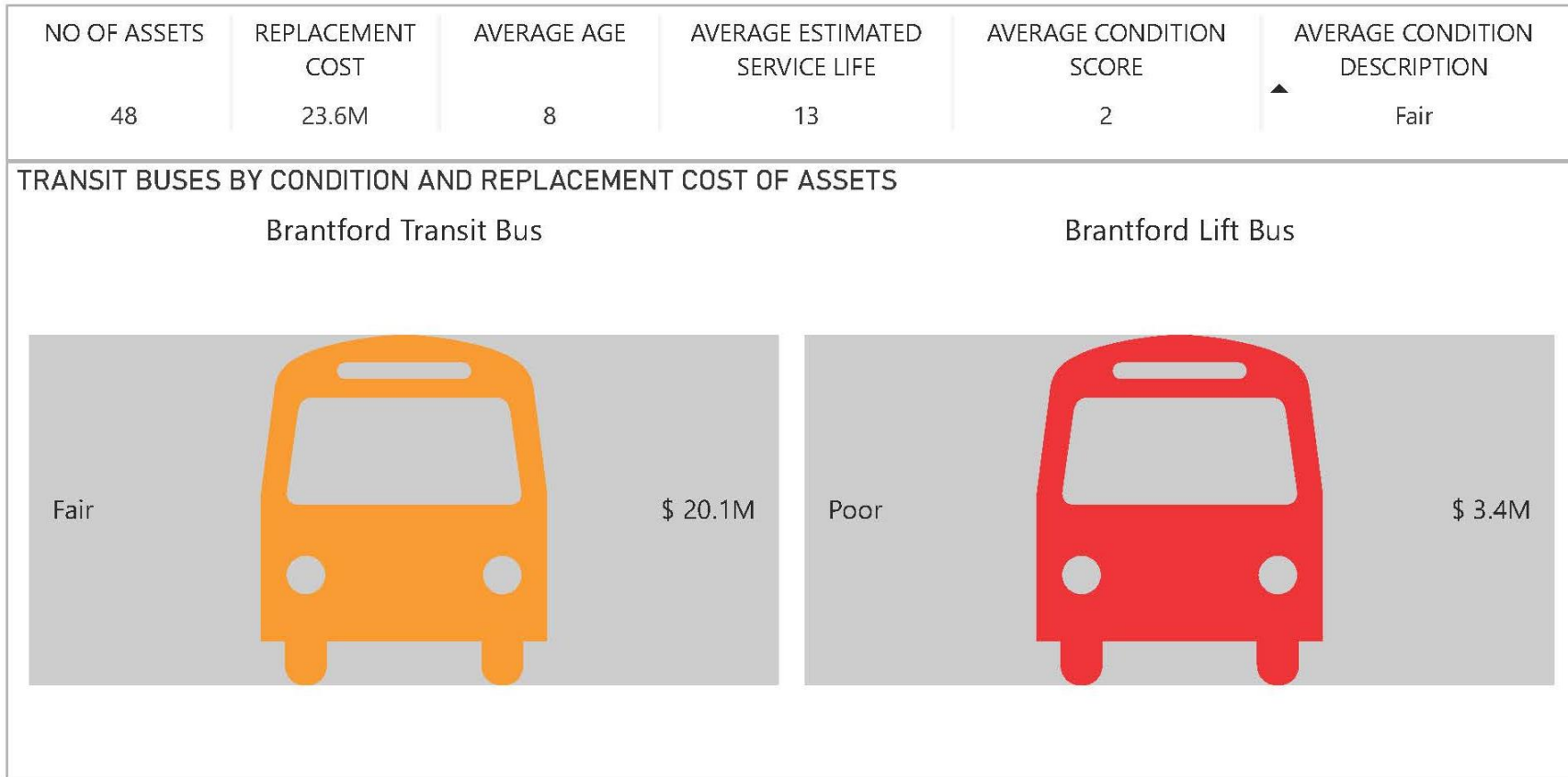


Figure 3: Transit Buses Asset Summary

1.3.5. OFF-ROAD VEHICLES

Heavy-duty vehicles are utilized across multiple departments in the Public Works commission, and are comprised of four (4) smaller subsets by vehicle type: Heavy Construction Equipment, Mowers/Tractors, Tools/Shop/Garage Equipment, and Ice Resurfacer. Per **Figure 4** below, the total replacement cost for the Off-Road Vehicle assets is \$9.6M and the assets are typically in Fair condition, with an average condition score of 2.

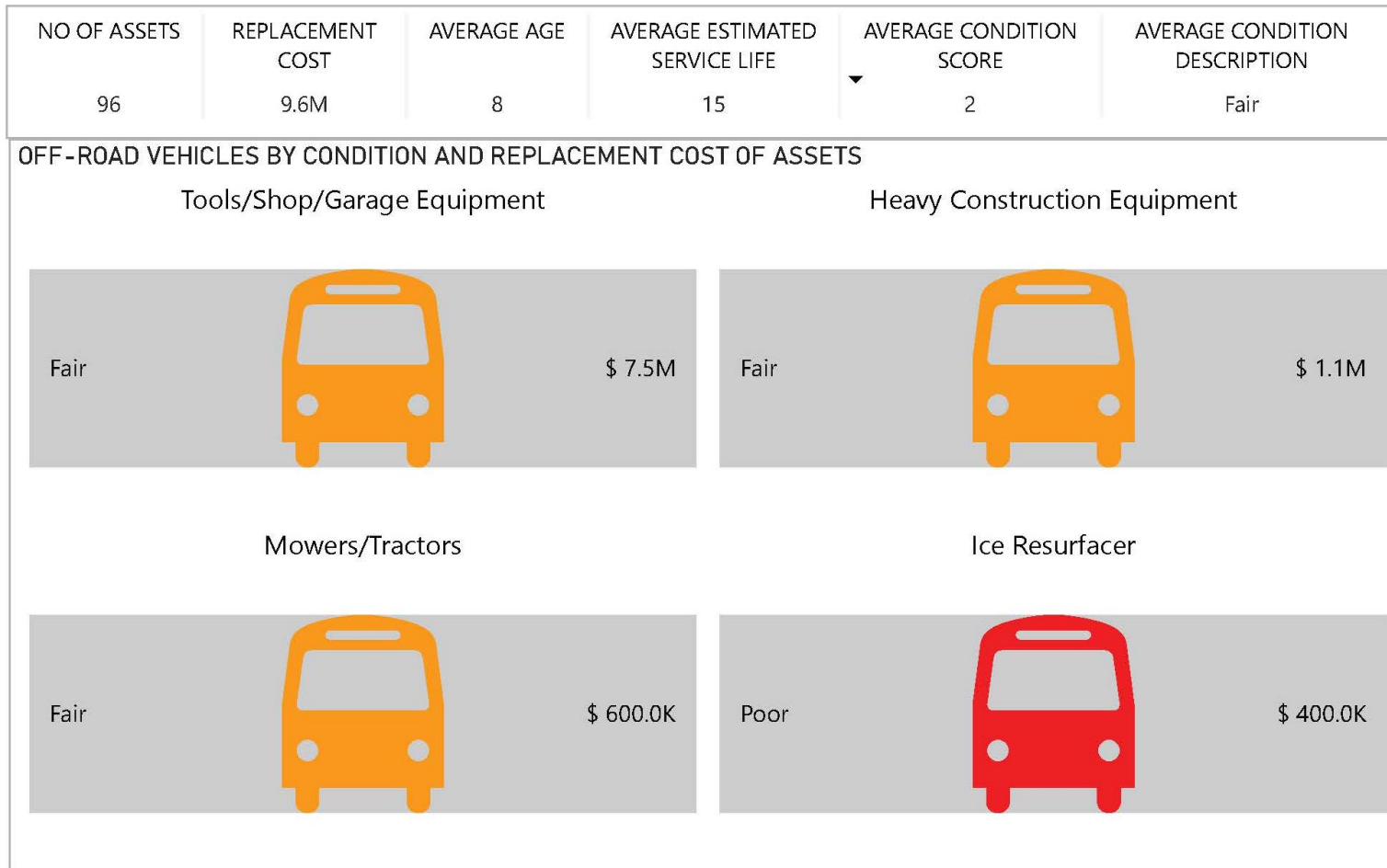


Figure 4: Off-Road Vehicle Asset Summary

1.3.6. ACCESSORIES AND PERIPHERALS

Accessories and Peripherals includes all assets that are not classified in the above categories, and is comprised of eight (8) smaller subsets by asset type: Communication Systems, Computer Hardware, Computer Software, Control Systems, Mowers/Tractors, Tools/Shop/Garage Equipment, Trailers/Golf Carts, and Turf Equipment. Per **Figure 5** below, the total replacement cost for the Accessories and Peripherals assets is \$4.8M and the assets are typically in Fair condition, with an average condition score of 2.









NO OF ASSETS	REPLACEMENT COST	AVERAGE AGE	AVERAGE ESTIMATED SERVICE LIFE	AVERAGE CONDITION SCORE	AVERAGE CONDITION DESCRIPTION
80	4.8M	10	15	2	Fair
ACCESSORIES AND PERIPHERALS BY CONDITION AND REPLACEMENT COST OF ASSETS					
Trailers/Golf Carts		Tools/Shop/Garage Equipment		Mowers/Tractors	
Fair	 \$ 1.3M	Poor	 \$ 1.1M	Fair	 \$ 720.0K
Communication Systems		Computer Hardware		Control Systems	
Fair	 \$ 480.0K	Good	 \$ 420.0K	Poor	 \$ 360.0K
Turf Equipment		Computer Software			
Fair	 \$ 240.0K	Fair	 \$ 180.0K		

Figure 5: Accessories and Peripherals Asset Summary

1.4. LIFECYCLE OF FLEET ASSETS

The lifecycle of fleet assets is described under four (4) categories which are described in this section:

- Key Lifecycle Stages of Fleet Assets;
- Lifecycle Activities;
- Risks of Lifecycle Activities; and
- 10 Year Lifecycle Costs of Fleet Assets.

1.4.1. KEY LIFECYCLE STAGES OF FLEET ASSETS

The lifecycle of an asset refers to the following stages: Planning, Creation/Acquisition, Operations and Maintenance, Renewal/Disposal which are defined in the Main Body of the report. For Fleet assets specifically our general process is as follows:

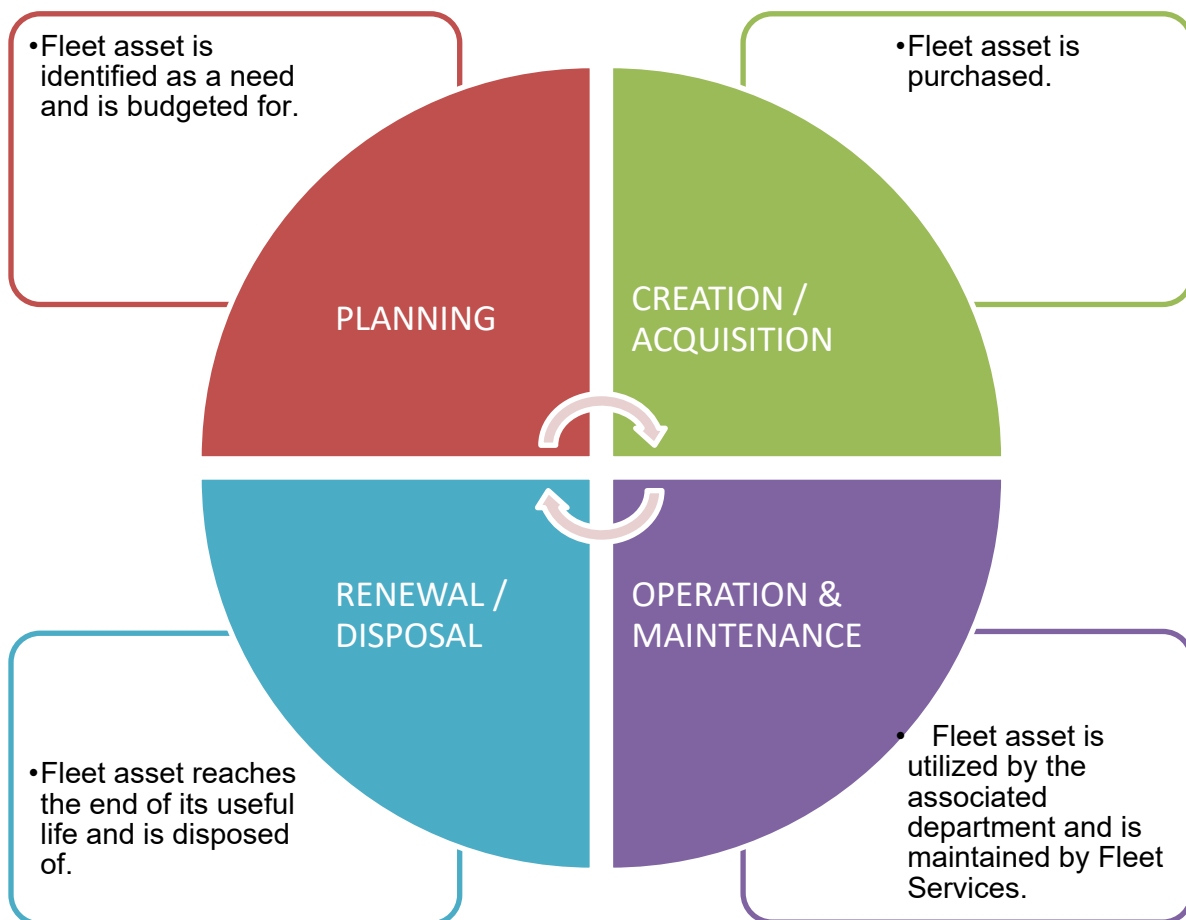


Figure 6: Lifecycle Stages of Fleet Assets

1. **Planning** –The Fleet asset has been identified as a need by a City department due to an increase in need for City services or an existing Fleet asset has reached the end of its useful life. The replacement asset is selected based on the departments need and Fleet Services support and approval. The process considers the available funding, an assessment through the Vehicle Right Sizing process as well as the City’s Climate Change Policy and Green Fleet Policy.
2. **Creation / Acquisition / Replacement** – The cost and requirements for retention of the new or replacement records asset are defined. The asset is received and inspected upon delivery. Assets are outfitted with the necessary accessories, decals, and onboard equipment before being placed into service.
3. **Operation and Maintenance** – The Fleet asset is operating and delivering services to customers. Maintenance (Lifecycle) Activities are completed regularly to prevent premature failures of the asset and to meet legislative requirements and manufacturers recommendations to comply with warranties. Additional monitoring and potential increases in maintenance activities are evaluated during this process.
4. **Renewal / Disposal** – The Fleet asset has reached the end of its useful life, is in poor condition, and/or is underperforming, and requires disposal. The disposal considers the effect on customers such as delay or service disruptions which are taken into account in the Planning stage thereby restarting the cycle. The City follows industry standards when disposing of these assets.

1.4.2. LIFECYCLE ACTIVITIES

A list of the planned Lifecycle Activities, annual cost, and frequency for Fleet assets can be found in **Table 6** below. These activities are currently being undertaken to maintain Fleet assets and therefore maintain the current levels of service.

Table 6: Lifecycle Activities for Fleet Assets

Asset Type	Lifecycle Activity	2024 Annual Cost*	Frequency	Completed by
Fleet Assets	Parts and Maintenance	\$1.67M	Varies, including scheduled works ranging from every 6 weeks to annually, or ad hoc parts/maintenance as required.	Fleet Services Staff

*2024 Annual Cost is typically based on estimates presented in the 2024 Operating Budget.

Lifecycle activities occur on all Fleet assets to maintain a good state of repair. Vehicle assets are currently typically tracked through Avantis.

The City's Avantis software system has reached the end of its useful lifecycle and the City is in the process of migrating asset management activities and inventory into AIM. It is anticipated that Fleet will be implemented into the new system by July 2024. Further details regarding AIM implementation is explained in **Section 7** of the **Asset Management Plan Overview Document**. Information related to Avantis can be found in **Section 4.2** of the **Asset Management Plan Overview Document**.

When these activities are integrated into AIM, the frequency and cost associated with these activities will be better represented. At this time, the costs associated with the O&M activities on these assets are estimated based on the 2024 Operating Budget and are not formally recorded, but future updates of the AMP should include actual costs, frequency, and time associated with these activities which will be recorded through AIM.

1.4.3. RISKS OF LIFECYCLE ACTIVITIES

The identified lifecycle activities in **Table 6** above are historical activities taken on by Fleet Services. Some risks associated with these activities include:

- **Operator Error** – When operators are operating equipment, there is a risk of an operator related accident. This risk is mitigated by ensuring all operators have the required licenses and are trained on equipment.
- **Equipment Failure** - Equipment failure can occur during maintenance activities and this is mitigated by ensuring preventative maintenance is completed at regular intervals to prevent this from occurring.

However, if these activities were not completed, the risks would include:

- **Service Disruptions** due to unavailable vehicles and equipment for departments to provide their level of service to the public;
- **Fines** due to being non-compliant with regulations and requirements under the Ministry of Transportation and Highway Traffic Act.
- **Suspension or Loss of Commercial Vehicle Operators Registration (CVOR)** due to being non-compliant with regulations under the Ministry of Transportation and Highway Traffic Act and the City would lose the right to operate heavy duty vehicles.
- **Suspension or Loss of Motor Vehicle Inspection Stations (MVIS)** due to being non-compliant with regulations under the Ministry of Transportation and Highway Traffic Act and the City would lose the right to inspect and certify City vehicles.
- **Increased Cost** due to reactive repairs which could have been prevented with preventative maintenance.

1.4.4. 10 YEAR LIFECYCLE COSTS OF FLEET ASSETS

Figure 7 below outlines the 10 year lifecycle costs of Fleet assets.

Typically when the condition of an asset is estimated based on service life there are spikes in the first year to account for the backlog of assets already beyond their estimated service life. This can be seen below, as a significant proportion of all asset types are identified for replacement within the first year. Capital costs for all asset types are more uniform between 2025 and 2033, but still fluctuate based on the number of vehicles reaching the end of their estimated service life in any given year. As tracking of operating condition of fleet assets improves, it is expected that the required capital cost will be more evenly distributed in future years.

The O & M costs identified in the 10-year cycle include costs related to fuel, vehicle parts, tires, tools, lubricants/chemicals, equipment/vehicle maintenance, and equipment/vehicle rental costs.

Based on the information presented in the figure below, the average annual capital cost for the next 10 years to maintain the state of good repair for Fleet assets is \$7.86M, and it is estimated that \$5.48M should be spent annually on O&M. Therefore, it is recommended that the City invest \$13.34M annually in Fleet assets to maintain the state of good repair.

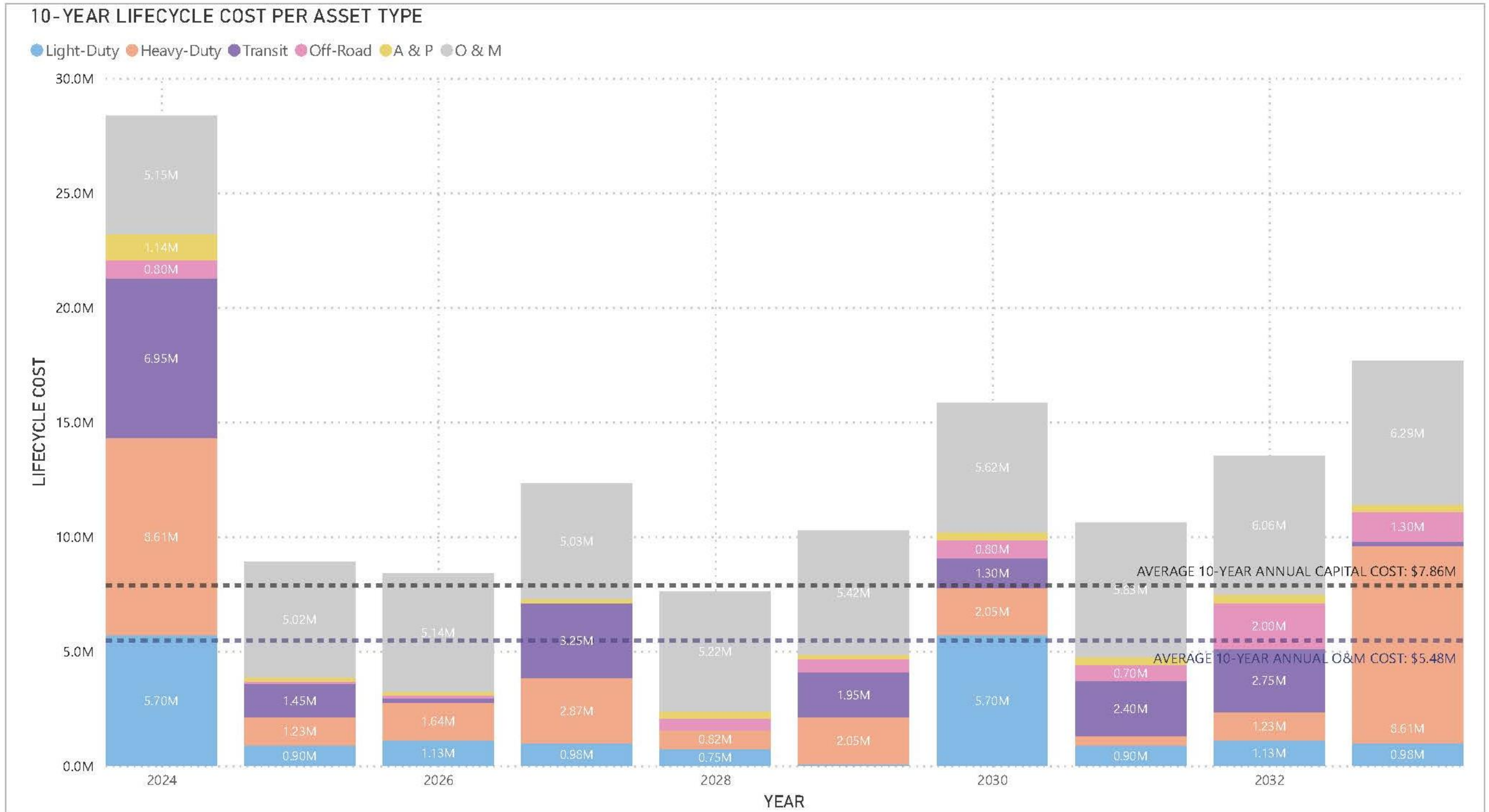


Figure 7: 10-Year Lifecycle Cost per Fleet Asset Type

- Notes:
- O&M costs are estimated based on the 2024-2027 Operating Budget. O&M costs beyond 2027 are estimated by 3.8% inflation each year.
 - Capital costs and lifecycle are estimated based on values and methodology identified in Section 1.3.

Per **Figure 8** below, the existing 10-year capital forecast from 2024-2033, as further explained in **Section 8.3** of the **Asset Management Plan Overview Document**, indicates that the City is currently planning to spend an average of \$7.88M on Fleet assets annually. As noted above, the required 10-year average annual amount is \$7.86M; therefore, the City is currently meeting their required funding targets, with a 10-year average annual funding surplus of \$20K.

The City of Brantford has moved to a four (4) year budget cycle and departments will complete long term planning as opposed to annual planning for projects within this time period. The Prioritization Matrix explained in **Section 9** of the **Asset Management Plan Overview Document** has also been implemented which will help departments confirm priority projects. It is anticipated that the new process for the City's 2024 budget cycle will help departments prepare and request funding in advance of significant replacement costs for assets reaching the end of their useful life.

It is important to note that currently the City does not have access to detailed data on Operation and Maintenance costs for Fleet assets, but with the implementation of new asset tracking software and department initiatives, it is anticipated this information will improve in future iterations of the AMP.

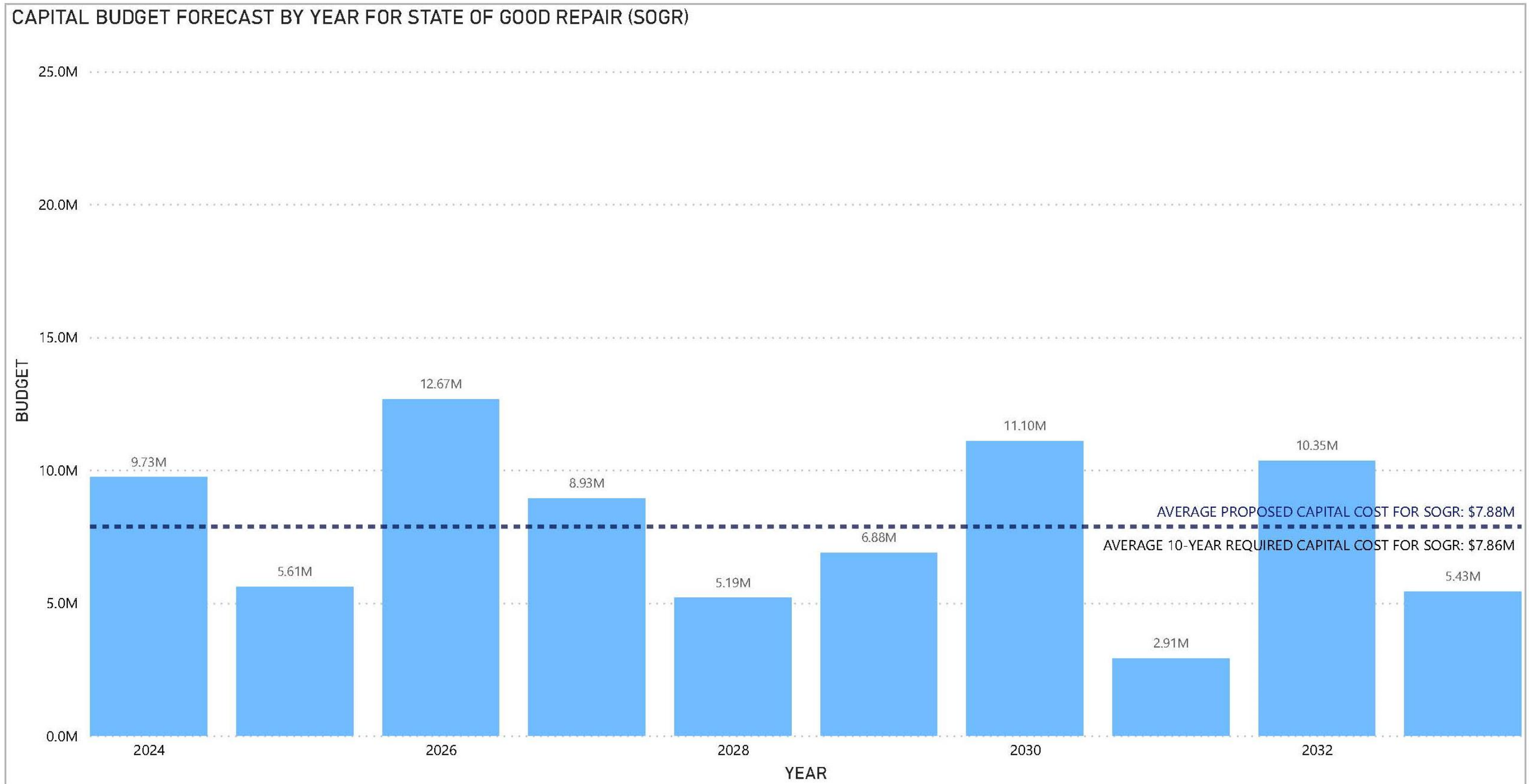


Figure 8: Existing Capital Budget Forecast from 2024–2033 for Fleet Assets

1.5. CURRENT LEVELS OF SERVICE

1.5.1. O. REG. 588/17 CUSTOMER LEVELS OF SERVICE

O. Reg. 588/17 does not currently have defined customer levels of service for this asset class that must be reported in this plan. This section will be kept for future iterations in case O. Reg. 588/17 requires defined customer levels of service be reported.

1.5.2. O. REG. 588/17 TECHNICAL LEVELS OF SERVICE

O. Reg. 588/17 does not currently have defined technical levels of service for this asset class that must be reported within this plan. This section will be kept for future plan iterations should O. Reg. 588/17 be updated and require defined technical levels of service be reported.

1.5.3. MUNICIPALLY DEFINED CUSTOMER LEVELS OF SERVICE

The customer levels of service are defined in **Section 6.2** of the **Asset Management Plan Overview**. For Fleet assets, the asset specific interpretation of these levels of service is defined below in **Table 7**.

Table 7: Municipally Defined Customer Levels of Service

Customer Level of Service	Definition
Accessibility	Fleet assets should be accessible to staff and customers without barriers in place.
Quality	Fleet assets should deliver their intended purpose at a certain quality.
Cost Efficiency	Fleet assets should be operated efficiently with extra care to minimize costs.
Safety	Fleet assets should be both safe to use and promote community safety. Staff and customers should feel safe using these assets.
Environmental Sustainability	Fleet assets should be operating as environmentally as possible and also be promoting sustainable lifestyles.
Reliability	Fleet assets should function and be available to staff and customers as scheduled.
Responsiveness	Fleet assets should be repaired promptly when unavoidable service disruptions occur. Responsiveness should account for the relative risk to the public, the surrounding property, the asset itself and to the staff completing the response.

1.5.4. MUNICIPALLY DEFINED TECHNICAL LEVELS OF SERVICE

The technical levels of service for Fleet Assets have been adopted based on the customer levels of service defined in **Table 7**. The currently available customer levels of service with the corresponding technical levels of service and KPI metrics are defined in **Table 8**.

The need for additional KPIs and KPI targets has been identified and future iterations of this AMP will look for opportunities to gather and include this information.

Table 8: Levels of Service KPIs

Customer Level of Service	Technical LOS	2024 KPI	Units
Accessibility*	Percent of Employees who feel comfortable accessing Fleet vehicles at various locations.	87%	% of Employees
Quality*	Percent of Employees who agree Fleet vehicles provided are appropriate to complete their assigned work.	76%	% of Employees
Cost Efficiency	Not Available	Not Available	Not Available
Safety*	Percent of Employees who agree Fleet vehicles are clean and safe to operate.	76%	% of Employees
	Percent of Employees who feel comfortable operating Fleet vehicles following repair or service.	95%	
Environmental Sustainability	Not Available	Not Available	Not Available
Reliability*	Percent of Employees who agree Fleet vehicles are available to staff when needed.	73%	% of Employees
Responsiveness*	Percent of Employees who agree Fleet vehicles are repaired in a timely manner.	75%	% of Employees
	Percent of Employees who agree Fleet vehicles are replaced at the end of their service life in a timely manner.	57%	

*Information obtained from staff surveys conducted in 2024, more details available in Overview Document

1.6. CURRENT ASSET PERFORMANCE

The current asset performance for Fleet assets has been separated into two (2) categories for this section of the report:

- Energy Performance; and
- Operating Performance

1.6.1. FLEET CURRENT ENERGY PERFORMANCE

The City of Brantford has a Corporate Energy Management Plan (CEMP) which emphasizes energy efficiency within the City. The CEMP includes goals to reduce energy use, energy intensity, and greenhouse gas (GHG) emissions in the City's transportation fleets. In addition, through the City's Climate Change Action Plan and Climate Lens Tool explained in **Section 10** of the **Asset Management Plan Overview Document**, the City will be working to improve energy efficiency and reduce the associated carbon footprint.

The City of Brantford also conducted a Corporate and Community Greenhouse Gas Emissions Inventory, which allows the City to track its progress towards meeting its GHG emissions reduction targets. Emissions are tracked annually and consolidated into a report every second year. Current energy performance for Fleet assets was obtained from the Greenhouse Gas Emissions Inventory, summarized in **Table 9** below.

Table 9: Current Energy Performance for Fleet assets

Service Type	2018 Emissions (T CO₂ e)*	2021 Emissions (T CO₂ e)*	2022 Emissions (T CO₂ e)*
Transit & Lift	3,358	3,034	2,939
Environmental Services	975	1,259	1,860
Operational Services	825	757	817
Parks & Recreation	330	382	361
Remainder of Fleet	103	49	89
Total	5,591	5,481	6,066
Change from 2018 Baseline		- 2%	+ 8%

* Based on information provided in the 2021/2022 Corporate and Community Greenhouse Gas Emissions Inventory

1.6.2. FLEET CURRENT OPERATING PERFORMANCE

The City of Brantford deployed a new automated vehicle locator software in late 2023, which will provide data over the coming years to better characterize trends in operating performance of Fleet assets. Current fuel efficiency of Fleet assets was obtained from the software and summarized in **Table 10** below.

Table 10: Current Operating Performance for Fleet assets

Vehicle Type	2023 Average Fuel Economy*	2024 Average Fuel Economy*
Electric Vehicles	2.0 Le/100 km	2.3 Le/100 km
Internal Combustion Engine Vehicles	30.5 L/100 km	29.0 L/100 km

* Based on information extracted from GeoTAB AVL in 2024.

Additional methods and data to track Operating Performance for this asset class will continue to be explored in future iterations of this document. Future tracking may include a review of fuel efficiency, maintenance incidents, etc.

1.7. DISCUSSION & CONCLUSIONS

In conclusion, the City of Brantford operates and maintains Fleet assets. These assets are in Fair condition with a total estimated replacement cost of approximately \$68.4M.

Inventory and condition data for Fleet assets are typically at a Medium to High confidence level, with an overall average confidence level of Medium.

Inventory data related to Fleet assets is at a High confidence level due to formal inventories that are completed by staff and reviewed regularly, as well as regular inspections of assets.

Replacement cost data is typically at a Medium confidence level, as costs are estimated based on original asset costs with adjustments for inflation and to account for economic and supply chain issues due to the COVID-19 pandemic.

Condition data related to Fleet assets is at a Medium confidence level, as the condition of these assets is estimated based on age and service life assumptions by City staff.

The lifecycle stages for Fleet assets includes: Planning, Creation, O&M, and Disposal. During the Planning stage, the City identifies the need to obtain a Fleet asset; during the Creation stage, the Fleet asset is purchased; during the O&M stage, the Fleet asset is in use by staff/customers and maintained by Fleet; and in the Disposal stage, the fleet asset has reached the end of its useful life and requires disposal.

Lifecycle activities are currently completed by City staff. At this time, detailed tracking and costs associated with these activities are not available and are estimated based on staff knowledge and the 2024 Operating Budget.

It is estimated based on the average annual cost in the 10 Year Lifecycle Costing that the City should be spending an average \$7.86M in capital investment annually for replacement of Fleet vehicles and assets at the end of their service life, and be spending an average of \$5.48M on O&M for Fleet assets. The City is currently planning to spend an average of \$7.88M on Fleet assets annually; therefore, the City is currently meeting their required funding targets, with a 10-year average annual funding surplus of \$20K.

Current Levels of Service have been identified for Fleet assets. Currently, these levels of service and associated KPIs are based on a survey conducted with internal City employees who would utilize Fleet assets. Brantford is working to continue to develop the process to track these metrics which will assist in tracking these and any further identified KPIs for future iterations.

Finally, asset performance is separated into energy and operating performance in the City's AMPs. For current energy performance, data from the 2021-2022 Corporate and Community Greenhouse Gas Emissions Inventory concluded that Fleet assets emissions were approximately 5,481 T CO_{2e} in 2021 and 6,066 T CO_{2e} in 2022. This equated to a two (2) percent reduction in greenhouse gas emissions in 2021 and an eight (8) percent increase in greenhouse gas emissions in 2022 in comparison to 2018 benchmark levels.

For current operating performance, data from automated vehicle tracking software summarized average fuel economy for Fleet assets. For electric vehicles, average fuel economy was 2.0 and 2.3 Le/100km for 2023 and 2024 respectively. For internal combustion engine vehicles, average fuel economy was 30.5 and 29.0 L/100km for 2023 and 2024 respectively.

Additional opportunities to track asset performance will be considered to provide updated information in future iterations of this plan.

2. TRANSIT SERVICES ASSETS

2.1. INTRODUCTION

The City of Brantford owns and maintains several assets under the Transit Services asset class. The purpose of this section is to present specific information about the Transit Services asset class so that we can answer the questions posed in **Section 2** of the **Asset Management Plan (AMP) Overview Document**, and includes the following:

- Transit Services Assets' Data Inventory and Condition Approach;
- Summary of Transit Services Assets;
- Lifecycle Activities and Cost of Transit Services Assets;
- Current Transit Services Assets' Levels of Service;
- Current Transit Services Asset Performance; and
- Conclusion.

2.2. TRANSIT SERVICES ASSETS' DATA INVENTORY AND CONDITION APPROACH

The City of Brantford has different approaches to establishing the condition for each Transit Services asset due to available resources, technologies, and budget restrictions.

There are currently three (3) approaches we use to assess the condition of our Transit Services assets:

- Outsourced condition assessments to consultants;
- Regular inspection programs conducted by City employees; and
- Estimated condition based on asset specific information.

A list of all condition assessments for all non-core assets can be found in **Table 6** in the **Asset Management Plan Overview Document**.

The origin of the Transit Services asset data for inventory, replacement cost, condition as well as data confidence are provided in **Table 11** below.

Table 11: Transit Services Assets' Data Origin and Confidence Levels

	Inventory			Replacement Cost			Condition		
Asset Type	Inventory (incl. Quantity and Age) From	Data Confidence Level	Data Confidence Description	Replacement Cost From	Data Confidence Level	Data Confidence Description	Condition From	Data Confidence Level	Data Confidence Description
Bus Signage	Bus Stop Inventory List	High	Formal inventory with few unknowns.	City staff and 2023 capital projects	High	Estimate based on staff knowledge and capital construction unit rates.	2018 Transit Stop Condition Assessments by KSGS Engineering Corp.	Medium	Formal condition assessment with few unknowns, but possibly outdated.
Bus Shelters	Bus Stop Inventory List	High	Formal inventory with few unknowns.	2022 Bus Pad and Shelter Replacement capital project	High	Estimate based on capital construction units rates.	2018 Transit Stop Condition Assessments by KSGS Engineering Corp.	Medium	Formal condition assessment with few unknowns, but possibly outdated.
Bus Pads	Bus Stop Inventory List	High	Formal inventory with few unknowns.	2022 Bus Pad and Shelter Replacement capital project	High	Estimate based on capital construction unit rates.	2018 Transit Stop Condition Assessments by KSGS Engineering Corp.	Medium	Formal condition assessment with few unknowns, but possibly outdated.

Per **Table 11** above, Transit Service assets' inventory and condition data are typically at a Medium to High confidence level with an overall average confidence level of High.

Inventory and condition data related to Transit Services assets are at a Medium to High confidence level due to the formal condition assessment completed by consultants in 2018, and on-going maintenance of inventory information by staff.

Replacement cost data is at a High confidence level. Bus Signage replacement costs are based on various 2023 capital construction costs for sign post installation, and staff knowledge for bus sign installation costs. Bus Shelter and Bus Pad replacement costs are based on capital construction costs for the Bus Pad and Shelter Replacement capital project, which included the removal and replacement of 33 pads and shelters throughout the City in 2022. These costs reflect increases due to COVID-19 and supply chain shortages.

Improvements to the inventories and inspection programs will also be ongoing as a result of the AIM project explained in **Section 7** of the **Asset Management Plan Overview document**.

2.2.1. SERVICE LIFE

Where condition assessments have not been completed, the condition has been estimated based on the estimated service life of the asset presented in **Table 12** below. The average overall estimated service life for assets can be found in **Table 14**.

Table 12: Transit Services Assets' Estimated Service Life

Asset	Estimated Service Life
Bus Shelters	15 years
Bus Pads	30 years

2.2.2. CONDITION SCORING

For the purpose of this report and standardizing condition scores across all assets in the Asset Management Plan, the Condition Rating is defined by three (3) Condition Scores as defined in **Table 13** below. For assets with formal consultant condition assessments, the conditions have been modified to fit into this model.

Table 13: Condition Score Description

Condition Score	Condition Rating	Description
1 – 1.4	Good	Assets are in working order, have no or minor deficiencies. Where condition data is not available, this category applies to assets which are within the first 40% of their estimated service life.
1.5 – 2.4	Fair	Asset show general signs of deterioration, some elements may have significant deficiencies, and asset will likely require repairs in the next 10 years. Where condition data is not available, this category applies to assets which are within 41% - 80% of their estimated service life.
2.5 – 3	Poor	Asset is below standard showing signs of significant deterioration, are in danger of imminent failure, and will require repair or replacement within the next year. Where condition data is not available, this category applies to assets which have exceeded 80% of their estimated service life.

2.3. SUMMARY OF TRANSIT SERVICES ASSETS

The summary of assets for the Transit Services asset class can be found below. The summary of assets includes: Quantity, Replacement Cost, Average Age, and Average Condition Score for each asset type.

2.3.1. TOTAL SUMMARY OF ASSETS

A table summarizing all Transit Services assets is included in **Table 14** below. Detailed information about each asset is included in individual sections. Calculations of averages have been weighted by the overall replacement value of assets; this means that assets of higher estimated replacement value will have a stronger influence on the average than if the average was calculated based on the number of assets. The total replacement cost for Transit Services assets is approximately \$2.8M. The average condition scores are shown to one decimal place to illustrate how close the scores are to being on a cusp of another rating and were used to calculate the weighted overall average condition score for the asset group, but are shown rounded to the nearest whole number in subsequent sections. Overall, Transit Services assets are in Fair condition, with a weighted average condition score of 1.7.

Table 14: Total Summary of Transit Services Assets

Asset	Quantity	Unit	Replacement Cost	Weighted Average Age (years)	Weighted Average Estimated Service Life (years)	% of Estimated Service Life Expended	Weighted Average Condition Score	Weighted Average Condition Description
Transit Services Total			\$2.8M	Unknown	22	N/A	1.7	FAIR
Bus Signage	485	ea	\$216K	Unknown	10	N/A	1.4	GOOD
Bus Shelters	67	ea	\$1.3M	Unknown	15	N/A	1.5	FAIR
Bus Pads	470	ea	\$1.3M	Unknown	30	N/A	2.0	FAIR

2.3.2. BUS SIGNAGE

Bus Signs are installed at all bus stops to communicate information such as bus stop location, stop number, route number, etc. Per **Figure 9** below, the City owns and maintains approximately 485 bus signs throughout the City. The total replacement cost for these signs is \$216K, and the signs are typically in Good condition with an average condition score of 1. The average age of bus signs has not been identified as this information is not recorded, and signs are typically replaced on an ad hoc basis due to damage or deterioration, or if relocation is required.

The 2018 Transit Stop Condition Assessment prepared by KSGS Engineering identified 51 signs that require replacement or relocation within a 2-year maintenance program, from 2018-2020. These signs are considered to be in Poor condition with an estimated condition score of 3, while the remaining signs not identified for replacement or relocation are considered to be in Good condition with an estimated condition score of 1.

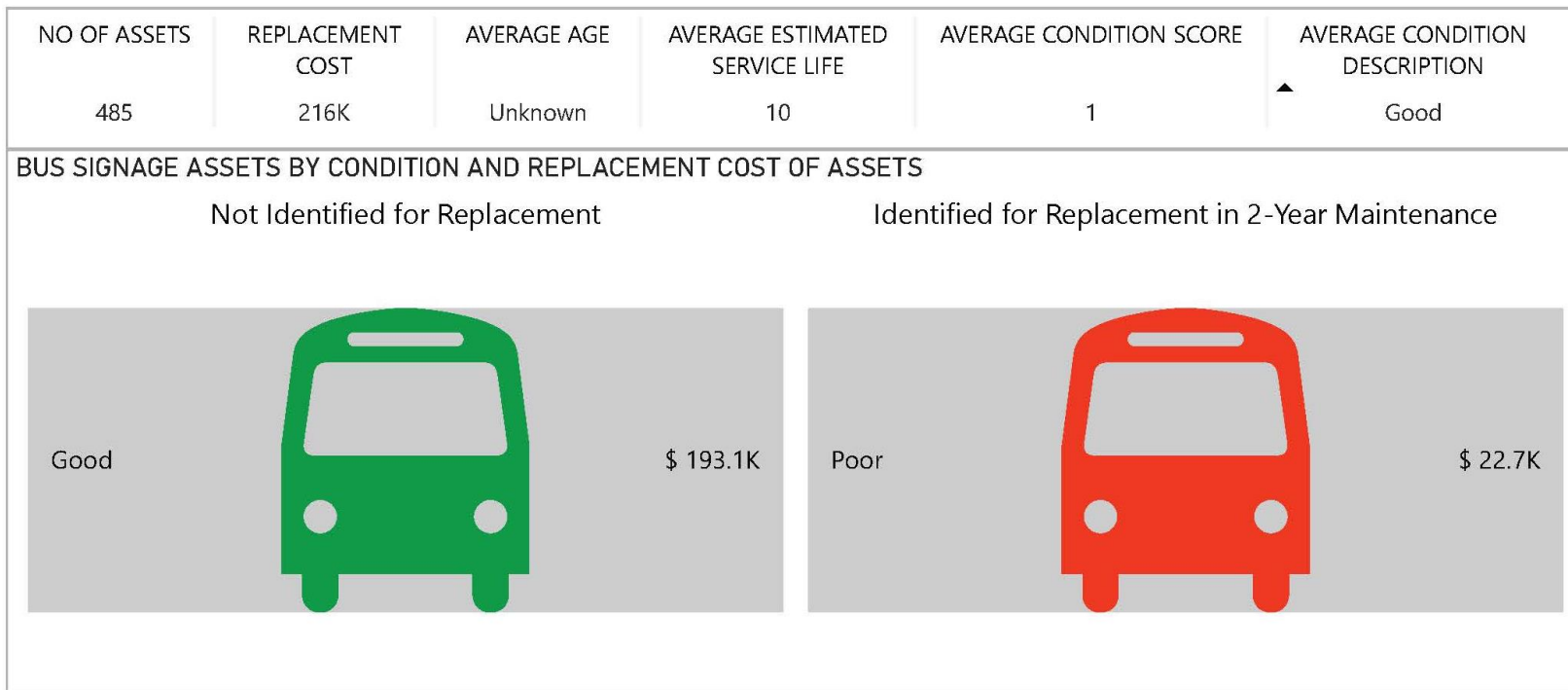


Figure 9: Bus Signage Asset Summary

2.3.3. BUS SHELTERS

Bus shelters are included at 67 bus stops throughout the City to provide additional comfort for riders as they await their bus. Per **Figure 10** below, the total replacement cost for these shelters is estimated at \$1.3M and the shelters are typically in Fair condition with an average condition score of 2.

The 2018 Transit Stop Condition Assessment prepared by KSGS Engineering identified bus shelters that require replacement within a 10-year capital program, from 2018-2028. Of those shelters, 33 shelters were replaced in 2022 as part of the Bus Pad and Shelter Replacement capital project, and are in Good condition with an estimated condition score of 1. An additional 27 shelters were identified for replacement before 2028, and are in Fair condition with an estimated condition score of 2. Seven (7) shelters were not identified for replacement by the condition assessment, and are in Good condition with an estimated condition score of 1.

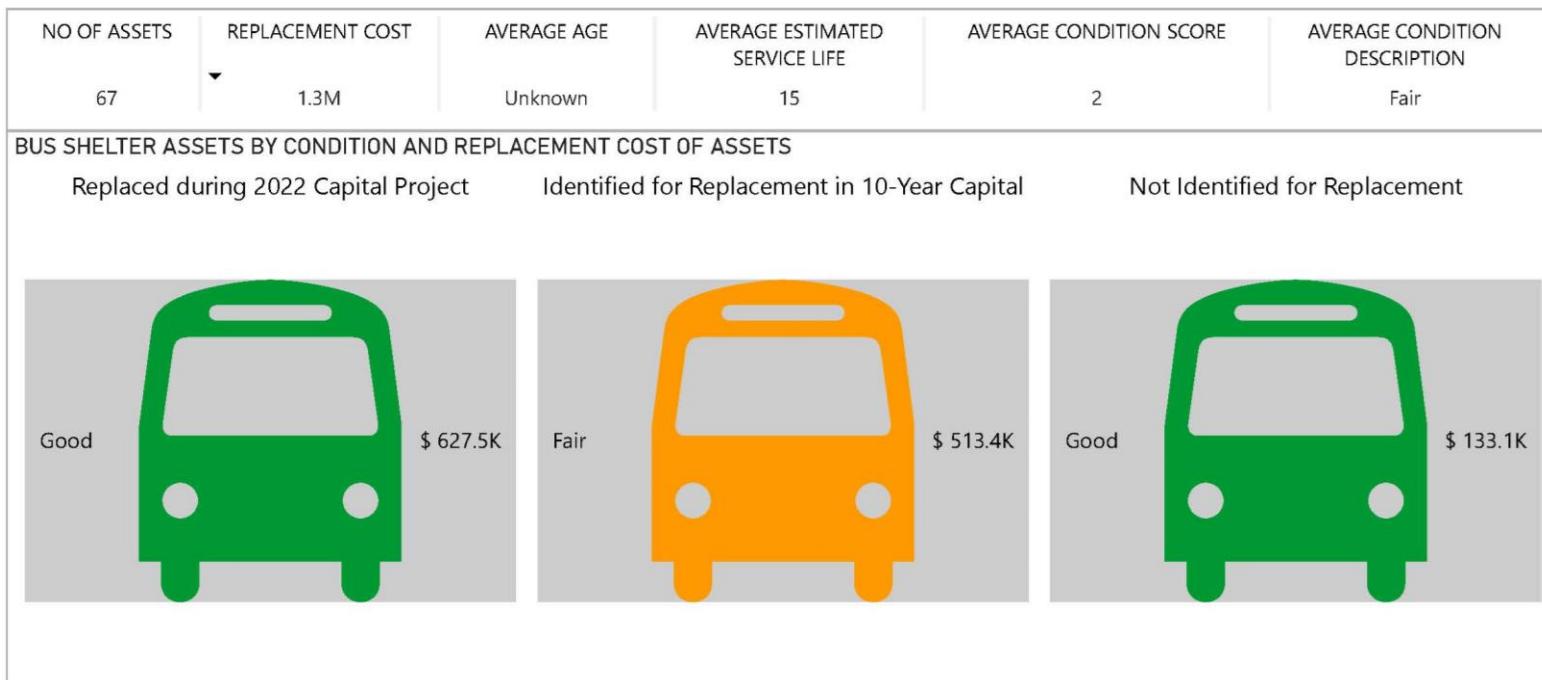


Figure 10: Bus Shelter Asset Summary

2.3.4. BUS PADS

Bus pads are included at 470 bus stops throughout the City to provide safe and accessible ingress and egress for riders to and from buses. Per **Figure 11** below, the total replacement cost for these bus pads is estimated at \$1.3M and the pads are typically in Fair condition with an average condition score of 2.

The 2018 Transit Stop Condition Assessment prepared by KSGS Engineering identified bus pads that require replacement within the 2-year maintenance program (2018-2020) and within the 10-year capital program (2018-2028). 33 bus pads were replaced in 2022 as part of the Bus Pad and Shelter Replacement capital project, and are in Good condition with an estimated condition score of 1. 154 bus pads were identified for replacement within the 2-year maintenance program, and are in Poor condition with an estimated condition score of 3. 163 bus pads were identified for replacement within the 10-year capital program, and are in Fair condition with an estimated condition score of 2. 120 bus pads were not identified for replacement by the condition assessment, and are in Good condition with an estimated condition score of 1.

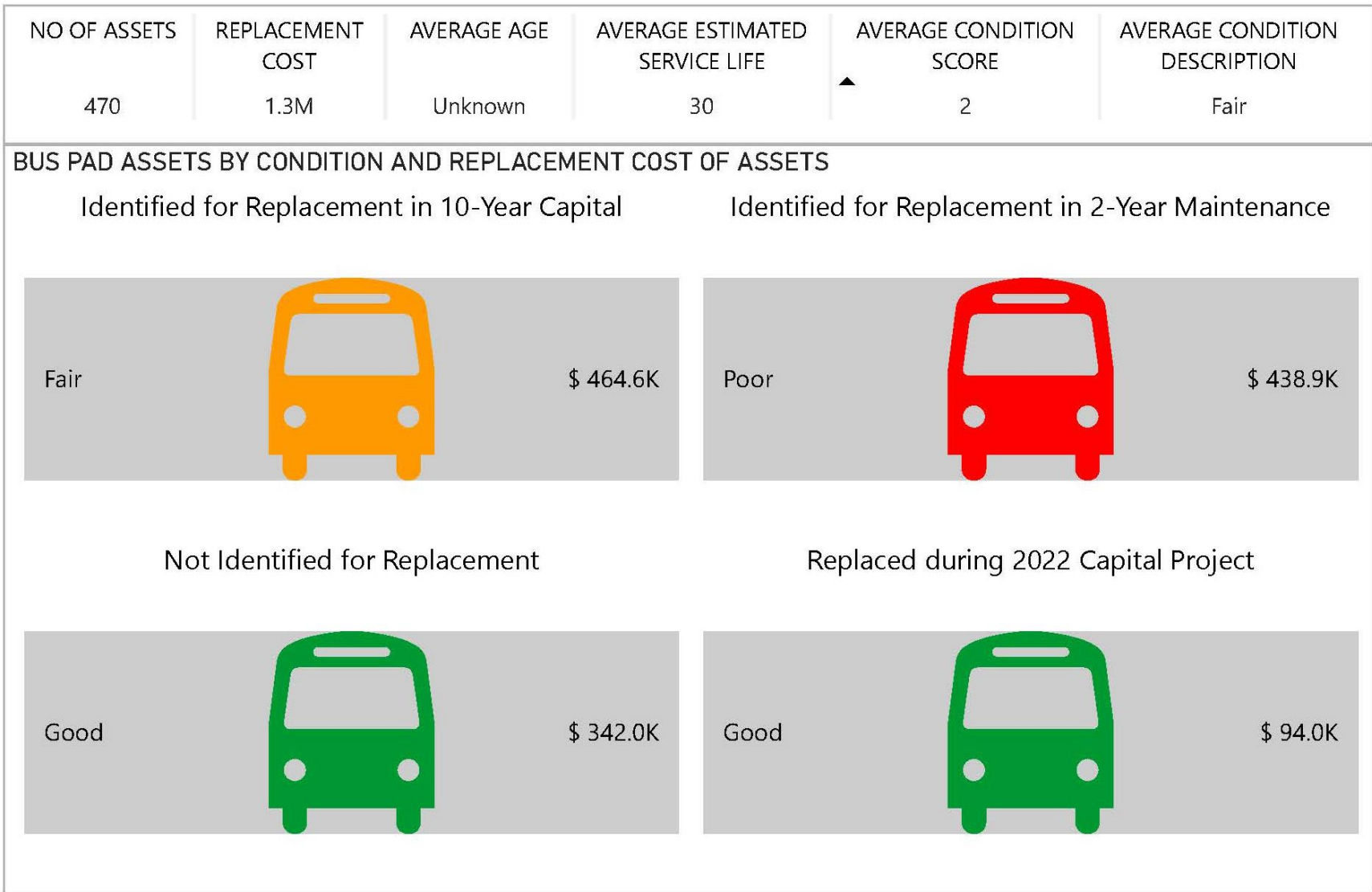


Figure 11: Bus Pad Asset Summary

2.4. LIFECYCLE OF TRANSIT SERVICES ASSETS

The lifecycle of Transit Services assets consists of four (4) categories which are described in this section:

- Key Lifecycle Stages of Transit Services Assets;
- Lifecycle Activities;
- Risks of Lifecycle Activities; and
- 10 Year Lifecycle Costs of Transit Services Assets.

2.4.1. KEY LIFECYCLE STAGES OF TRANSIT SERVICES ASSETS

The lifecycle of an asset refers to the following stages: Planning, Creation/Acquisition, Operations and Maintenance, Renewal/Disposal which are further defined in the Asset Management Plan Overview Document. For Transit Services assets specifically our general process is as follows:

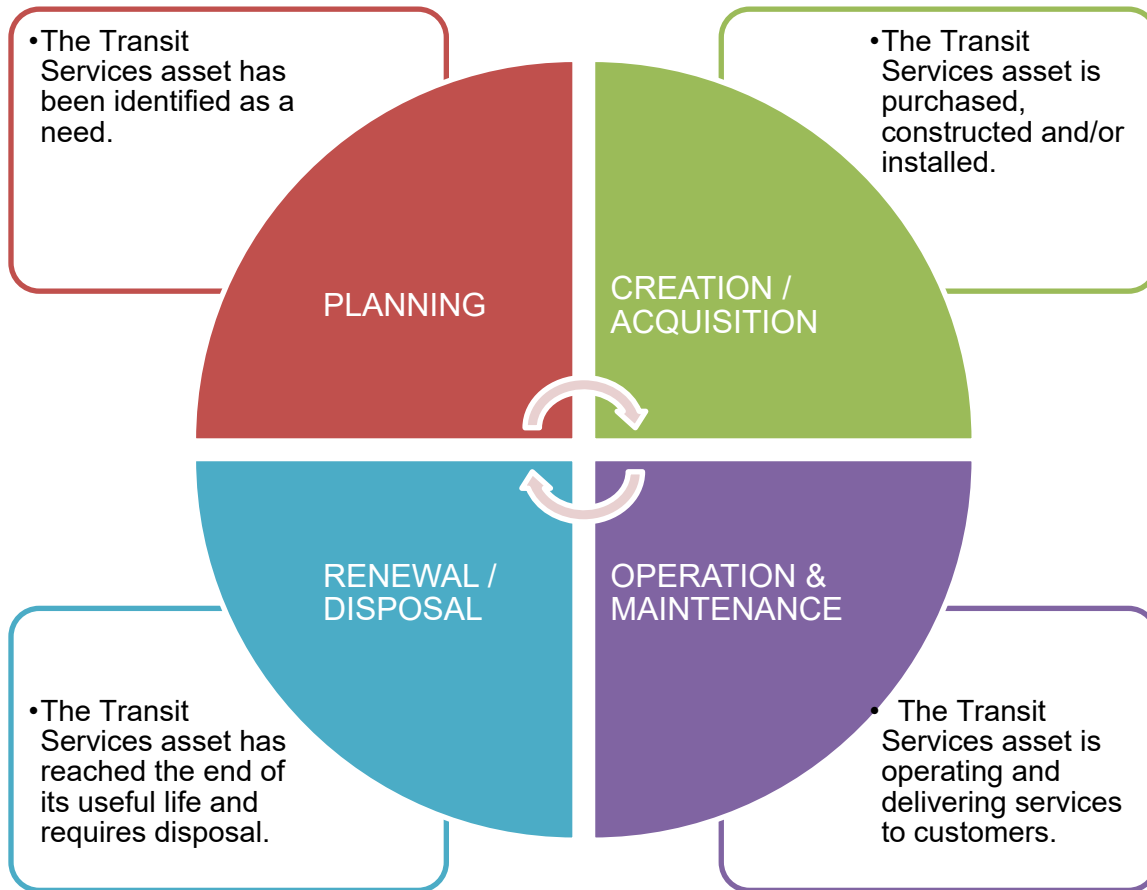


Figure 12: Lifecycle Stages of Transit Services Assets

1. **Planning** – The Transit Services asset has been identified as a need, and is reviewed to ensure that it complies with all necessary regulations and standards.
2. **Creation / Acquisition / Replacement** – The cost and requirements for the new or replacement Transit Services asset are defined. The asset is purchased, constructed and/or installed. Extra care is taken at this stage to ensure the asset is constructed properly using all appropriate design standards and guidelines to avoid any premature repairs or replacements due to installation errors.

3. **Operation and Maintenance** – The Transit Services asset is operating and delivering services to customers. Maintenance (Lifecycle) Activities are completed on the asset at specific time intervals as indicated in **Section 2.4.2** below to prevent premature failures of the asset.
4. **Renewal / Disposal** – The Transit Services asset has reached the end of its useful life, is in poor condition, and/or is underperforming, and requires disposal. The disposal considers the effect on customers such as required detouring or service disruptions which are taken into account in the Planning stage thereby restarting the cycle. The City follows industry standards when disposing of these assets.

2.4.2. LIFECYCLE ACTIVITIES

A list of the planned Lifecycle Activities, annual cost, and frequency for each Transit Services Asset Class can be found in **Table 15** below. These activities are currently being undertaken to maintain our Transit Services assets and therefore maintain the current levels of service.

Table 15: Lifecycle Activities for Transit Services Assets

Asset Type	Lifecycle Activity	2024 Annual Cost*	Frequency	Completed by
Bus Shelters	Repairs and Maintenance	\$20,000	As needed	Contracted Service
Bus Pads	Show Clearing	\$66,950	As needed	Contracted Service

*2024 Annual Cost is typically based on estimates presented in the 2024 Operating Budget.

Lifecycle activities occur on each of our Transit Services assets to maintain the state of good repair (SOGR). When these activities are integrated into AIM, the frequency and cost associated with these activities will be better represented. At this time, the costs associated with the O&M activities on these assets are estimated based on 2024 Operating Budget and are not formally recorded, but future updates of the AMP should include actual costs, frequency, and time associated with these activities which will be recorded through AIM.

2.4.3. RISKS OF LIFECYCLE ACTIVITIES

The identified lifecycle activities in **Table 15** above are historical activities taken on by Transit Services. However, some risks with these activities include:

- **Traffic Accidents** - when performing maintenance in the vicinity of traffic vehicles, there is a risk of a traffic accident. This is mitigated by implementing a traffic control plan and wearing high visibility clothing during maintenance activities in the right of way;
- **Operator Error** – When operators are operating equipment, there is a risk of an operator related accident. This risk is mitigated by ensuring all operators have the required licenses and are trained on equipment.
- **Equipment Failure** - Equipment failure can occur during maintenance activities and this is mitigated by ensuring preventative maintenance is completed at regular intervals to prevent this from occurring.

However, if these activities were not completed, the risks would include:

- **Increased Complaints** due to buildup of debris, garbage, broken glass and graffiti at bus stops or within shelters;
- **Service Disruptions** due to asset failures and inaccessible assets that could have been mitigated with preventative maintenance;
- **Health and Safety Hazards** to customers due to debris and broken glass that could have been mitigated with proper cleaning and maintenance;
- **Increased Cost** due to reactive repairs which could have been prevented with preventative maintenance.

2.4.4. 10 YEAR LIFECYCLE COSTS OF TRANSIT SERVICES ASSETS

Figure 13 below outlines the 10 year lifecycle costs of Transit Services assets.

It can be seen below that a heightened proportion of Bus Signage and Bus Pad assets are identified for replacement within the first year. This spike is due to the number of assets identified for replacement within the 2-year maintenance program (2018-2020) by the 2018 Transit Stop Condition Assessment prepared by KSGS Engineering.

Capital costs for Bus Shelter and Bus Pad asset types are uniform between 2024 and 2028, reflecting the outstanding number of assets identified for replacement within the 10-year capital program (2018-2028) as per the Condition Assessment. Capital costs are shown evenly distributed between 2024 and 2028 to reflect the funding required for an annual replacement program of these assets.

The O & M costs identified in the 10-year cycle include costs related to activities such as snow clearing and minor repairs/maintenance.

Based on the information presented in the figure below, the average annual capital cost for the next 10 years to maintain the state of good repair for Transit Services assets is \$144.0K, and it is estimated that \$100.7K should be spent annually on O&M. Therefore, it is recommended that the City invest \$244.7K annually in Transit Services assets to maintain the state of good repair.

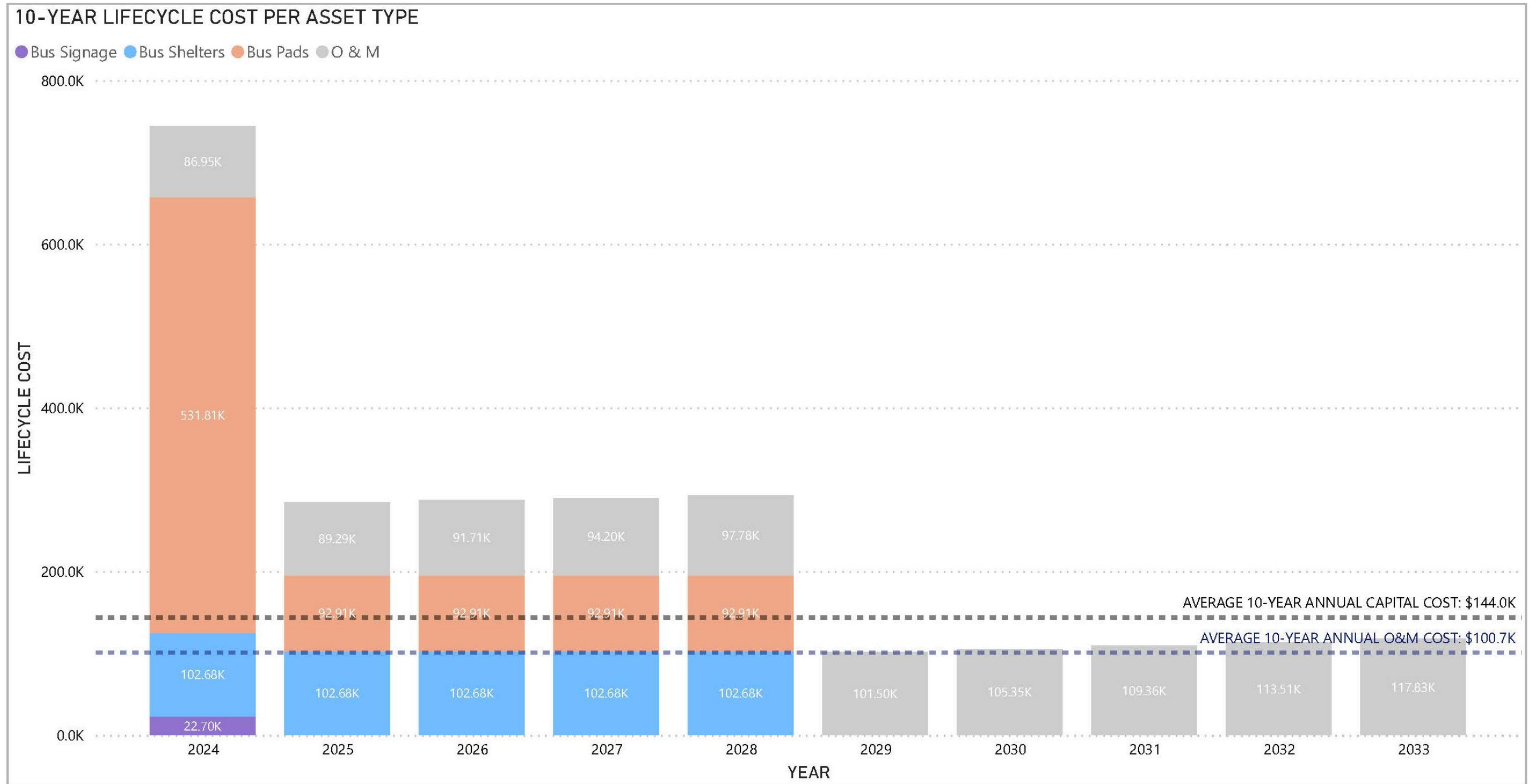


Figure 13: 10-Year Lifecycle Cost Per Transit Services Asset Type

Notes:

- O&M Costs are estimated based on the 2024-2027 Operating Budget. Values beyond 2027 are estimated by 3.8% inflation each year. These O&M Costs are associated with the lifecycle activities identified in **Table 15**.
- Capital costs and lifecycle are estimated based on values and methodology identified in **Section 2.3**.

Per **Figure 14** below, the existing 10-year forecast from 2024 – 2033, further explained in **Section 8.3** of the **Asset Management Plan Overview Document**, indicates that the City is not currently dedicating capital funding to the replacement of Transit Services assets annually. The figure identifies an annual 10-year capital funding gap of \$144.0K for these assets.

The City of Brantford has moved to a four (4) year budget cycle and departments will complete long term planning as opposed to annual planning for projects within this time period. The Prioritization Matrix explained in **Section 9** of the **Asset Management Plan Overview Document** has also been implemented which will help departments confirm priority projects. It is anticipated that the new process for the City's 2024 budget cycle will help departments prepare and request funding in advance of significant replacement costs for assets reaching the end of their useful life.

It is important to note that currently the City does not have access to detailed data on Operation and Maintenance costs, but it is anticipated this information will improve in future iterations of the AMP.

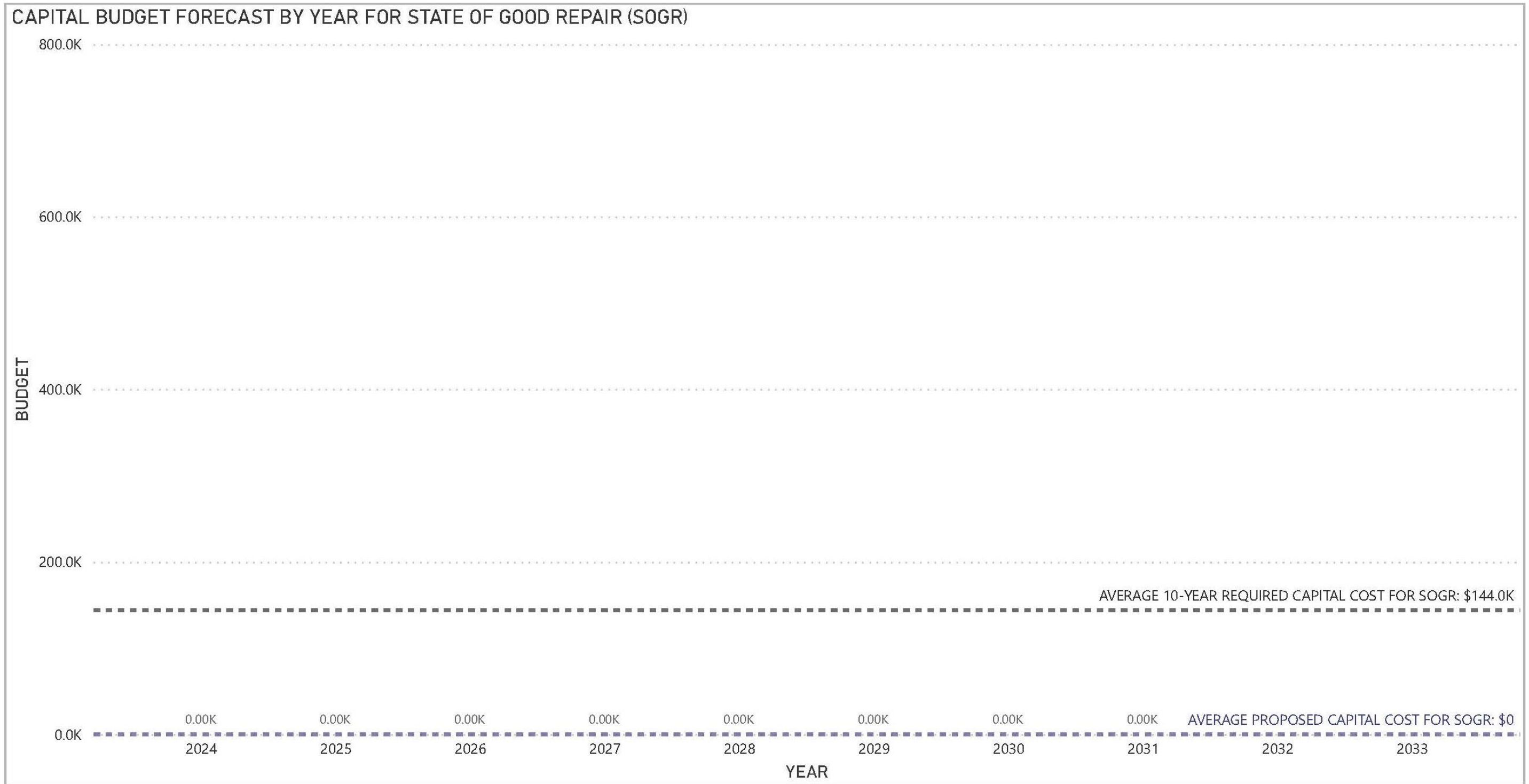


Figure 14: Existing Capital Budget Forecast from 2024-2033 for Transit Services Assets

Notes:

- Capital budget forecast is estimated based on the 2024-2027 Capital Budget. Capital budget beyond 2027 is estimated by 3.8% inflation each year.

2.5. CURRENT LEVELS OF SERVICE

2.5.1. O. REG. 588/17 CUSTOMER LEVELS OF SERVICE

O. Reg. 588/17 does not currently have defined customer levels of service for this asset class that must be reported in this plan. This section will be kept for future iterations in case O. Reg. 588/17 requires defined customer levels of service be reported.

2.5.2. O. REG. 588/17 TECHNICAL LEVELS OF SERVICE

O. Reg. 588/17 does not currently have defined technical levels of service for this asset class that must be reported in this plan. This section will be kept for future iterations in case O. Reg. 588/17 requires defined technical levels of service be reported.

2.5.3. MUNICIPALLY DEFINED CUSTOMER LEVELS OF SERVICE

The customer levels of service are defined in **Section 6.2** of the **Asset Management Plan Overview**. For Transit Services assets, the asset specific interpretation of these levels of service is defined below in **Table 16**.

Table 16: Municipally Defined Customer Levels of Service

Customer Level of Service	Definition
Accessibility	Transit Services assets should be accessible to all customers without barriers in place.
Quality	Transit Services assets should deliver their intended purpose at a certain quality, and assets should have sufficient capacity.
Cost Efficiency	Transit Services assets should be operated efficiently with extra care to minimize costs.
Safety	Transit Services assets should be both safe to use and promote community safety, and customers should feel safe using these services.
Environmental Sustainability	Transit Services assets should be operating as environmentally as possible and also be promoting sustainable lifestyles.
Reliability	Transit Services assets should be available during service hours and care should be taken to avoid closures or service disruptions.
Responsiveness	Transit Services assets should be maintained and repaired promptly to avoid service disruptions. Responsiveness should account for the relative risk to the public, the surrounding property, the asset itself and to the staff completing the response.

2.5.4. MUNICIPALLY DEFINED TECHNICAL LEVELS OF SERVICE

The technical levels of service for Transit Services Assets have been adopted based on the customer levels of service defined in **Table 16**. The currently available customer levels of service with the corresponding technical levels of service and KPI metrics are defined in **Table 17**.

Due to a low response rate on customer surveys conducted in 2023/2024, the confidence level in the applicability of the KPIs derived from the survey data, to the wider population, is Low. The need for additional KPIs and KPI targets has been identified and future iterations of this AMP will look for opportunities to gather and include this information.

Table 17: Levels of Service KPIs

Customer Level of Service	Technical LOS	2024 KPI	Units
Accessibility*	Percentage of Bus Shelters that meet AODA compliance as per Condition Assessment	58%	% of Bus Shelters
Quality**	Percentage of Customers who rate overall Brantford Transit performance as Average or above.	78%	% of Customers
Cost Efficiency	Not Available	Not Available	Not Available
Safety**	Percentage of Customers who feel safe accessing services at Transit Stops.	40%	% of Customers
Environmental Sustainability	Not Available	Not Available	Not Available
Reliability**	Percentage of Customers who rate overall performance of maintaining Transit schedule as Average or above.	50%	% of Customers
Responsiveness	Not Available	Not Available	Not Available

*Note: Information based on data from 2018 Transit Stop Condition Assessment prepared by KSGS Engineering and 2022 Bus Pad and Shelter Replacement Capital Project.

**Note: Information obtained from customer surveys conducted in 2023/2024, more details available in Overview Document. Due to a low response rate, the confidence level in the applicability of the information to the wider population is Low.

2.6. CURRENT ASSET PERFORMANCE

The current asset performance for Transit Services assets has been separated into two (2) categories for this section of the report:

- Energy Performance; and
- Operating Performance

2.6.1. TRANSIT SERVICES CURRENT ENERGY PERFORMANCE

The City of Brantford has a Corporate Energy Management Plan (CEMP) which emphasizes energy efficiency within the City. The goals of the CEMP are to reduce energy use, energy intensity, and greenhouse gas (GHG) emissions in our Facilities. In addition, through the City's Climate Change Action Plan and Climate Lens Tool explained in **Section 10** of the **Asset Management Plan Overview Document**, the City has been working to improve our facilities' energy efficiency and reduce the associated carbon footprint.

Currently, the City does not have a method to track Energy Performance for the Transit Services asset class. This section will be kept for future iterations as ways to track Energy Performance for this asset class are explored.

2.6.2. TRANSIT SERVICES CURRENT OPERATING PERFORMANCE

Currently, the City does not have a method to track Operating Performance for the Transit Services asset class. This section will be kept for future iterations as ways to track Operating Performance for this asset class are explored.

2.7. DISCUSSION & CONCLUSIONS

In conclusion, the City of Brantford operates and maintains Transit Services assets. These assets are in Fair condition with a total estimated replacement cost of approximately \$2.8M.

Inventory and condition data for Transit Services assets are typically at a Medium to High confidence level, with an overall average confidence level of High.

Inventory and condition data related to Transit Services assets are at a Medium to High confidence level due to the formal condition assessment completed by consultants in 2018, and inventories maintained by staff.

Replacement cost data is at a High confidence level. Bus Signage replacement costs are based on various 2023 capital construction costs for sign post installation, and staff knowledge for bus sign installation costs. Bus Shelter and Bus Pad replacement costs are based on capital construction costs for the Bus Pad and Shelter Replacement capital project.

The lifecycle stages for Transit Services assets includes: Planning, Creation, O&M, and Disposal. During the Planning stage, the City identifies the need to obtain a Transit asset; during the Creation stage, the Transit asset is installed or constructed; during the O&M stage, the Transit asset is in use by customers; and in the Disposal stage, the Transit asset has reached the end of its useful life and requires disposal.

Lifecycle activities are currently completed by suppliers/contractors to maintain state of good repair. At this time, detailed tracking and costs associated with these activities are not available and are estimated based on staff knowledge and the 2024 Operating Budget.

It is estimated based on the average annual cost in the 10 Year Lifecycle Costing that the City should be spending an average 144.0K in capital investment annually for replacement of Transit Services assets at the end of their service life, and be spending an average of \$100.7K on O&M for Transit Services assets; however, the City is not currently dedicating any capital funding annually for state of good repair.

Current Levels of Service have been identified for Transit assets. Currently, these levels of service and associated KPIs are based on a survey conducted in 2023/2024 with external customers who utilize Parking Services assets. Due to a low response rate on customer surveys, the confidence level in the applicability of the KPIs derived from the survey data to the wider population is Low at this time. Brantford is working to continue to develop the process to track these metrics which will assist in tracking these and any further identified KPIs for future iterations.

Finally, asset performance is separated into operating and energy performance in the City's AMPs. However, due to limited tracking for assets, the City is not able to provide information for Transit Services asset performance in this iteration of the AMP. Opportunities to track energy performance may be considered to provide updated information in future iterations of this plan.