

2024

London Transit Commission (LTC) Asset Management Plan

City of London

london.ca/CAM



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Acknowledgement

Land Acknowledgment

We acknowledge that London Transit Commission resides on the traditional lands of the Anishinaabeg, Haudenosaunee, Lūnaapéewak and Attawandaron. We acknowledge all the treaties that are specific to this area: the Two Row Wampum Belt Treaty of the Haudenosaunee Confederacy/Silver Covenant Chain; the Beaver Hunting Grounds of the Haudenosaunee NANFAN Treaty of 1701; the McKee Treaty of 1790, the London Township Treaty of 1796, the Huron Tract Treaty of 1827, with the Anishinaabeg, and the Dish with One Spoon Covenant Wampum of the Anishnaabek and Haudenosaunee. This land continues to be home to diverse Indigenous people (First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors to society. As representatives of the people of the London Transit Commission, we are grateful to have the opportunity to work and live in this territory.

Staff Acknowledgment

The Corporate Asset Management office would like to acknowledge the efforts of the London Transit Commission staff for the effort and support they put forth to help accumulate the data and develop the findings of this Asset Management Plan. We are also sincerely thankful to the London Transit Commission and City Council for their support.

City of London Council (2022-2026)

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Section 1. Executive Summary

1.1: 2024 LTC Asset Management Plan Introduction

The London Transit Commission (LTC) infrastructure systems represent one of the critical backbones of providing the City of London a range of conventional and specialized transit services. Being the valued and trusted mobility choice for Londoners comprises London Transit Commission's strategic vision.

This Asset Management Plan (AMP) is designed to enhance the management of LTC's infrastructure assets in a way that connects strategic LTC, City of London, and community economic and social objectives to day-to-day and long-term infrastructure investment decisions. This is accomplished by:

- Aligning with the regulatory landscape, by meeting the requirements of Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure (O. Reg. 588/17), and positioning LTC for capital grant funding applications.
- Understanding the current state of the infrastructure systems (value, quantity, age, condition, etc.).
- Measuring and monitoring levels of service (LOS) to quantify how well infrastructure systems are meeting expectations.
- Communicating asset lifecycle management activities (e.g., how infrastructure is operated, maintained, rehabilitated, and replaced).
- Determining the optimal costs and reinvestment rates of the asset lifecycle activities split between those that maintain current LOS and those that achieve proposed LOS;
- If necessary, establishing an infrastructure gap financing strategy to fund the expenditures that are required to meet London Transit Commission's approved LOS and associated lifecycle activities.

Key findings of the 2024 LTC AMP are:

- There are \$510.3 million dollars of infrastructure assets under LTC management;
- Overall, these assets are in Good condition;
- The cumulative 10-year maintain current LOS gap is approximately \$80 million and there is no identified achieve proposed LOS infrastructure gap; and
- The average planned budgets for 2023-2032 (based on the 2023 annual budget update) to maintain current and achieve proposed LOS represents a reinvestment rate of 9.0% and 9.5% respectively. This is less than the recommended average to maintain current LOS and achieve proposed LOS reinvestment rates of 10.9% and 11.4% respectively.

A summary of these results is presented in the following tables and figures:

- Table 1.1 summarizes the infrastructure gaps and presents them as a percentage of LTC's infrastructure assets replacement value;
- Figure 1.1 summarizes the overall condition distribution of the assets between those that are in Very Good to Very Poor condition;
- Figure 1.2 shows the optimal maintain current LOS and achieve proposed LOS expenditures compared to planned budget and additional reserve fund availability, and the resulting infrastructure gaps;
- Table 1.2 presents the reinvestment rates for planned budget, maintain current LOS, and achieve proposed LOS.

Table 1.1 2024 AMP Summary Information

Summary Information	Maintain Current LOS	Achieve Proposed LOS
Replacement Value (\$millions)	\$510.3	\$510.3
10-Year Infrastructure Gap (\$millions)	\$80.0	None Identified
Infrastructure Gap as a Percentage of Replacement Value	15.7%	None Identified

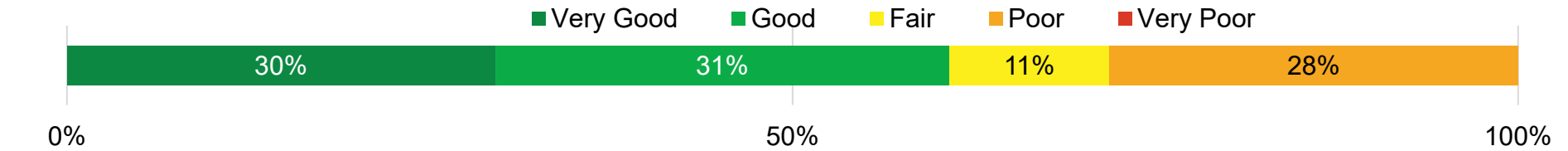


Figure 1.1 Overall Condition

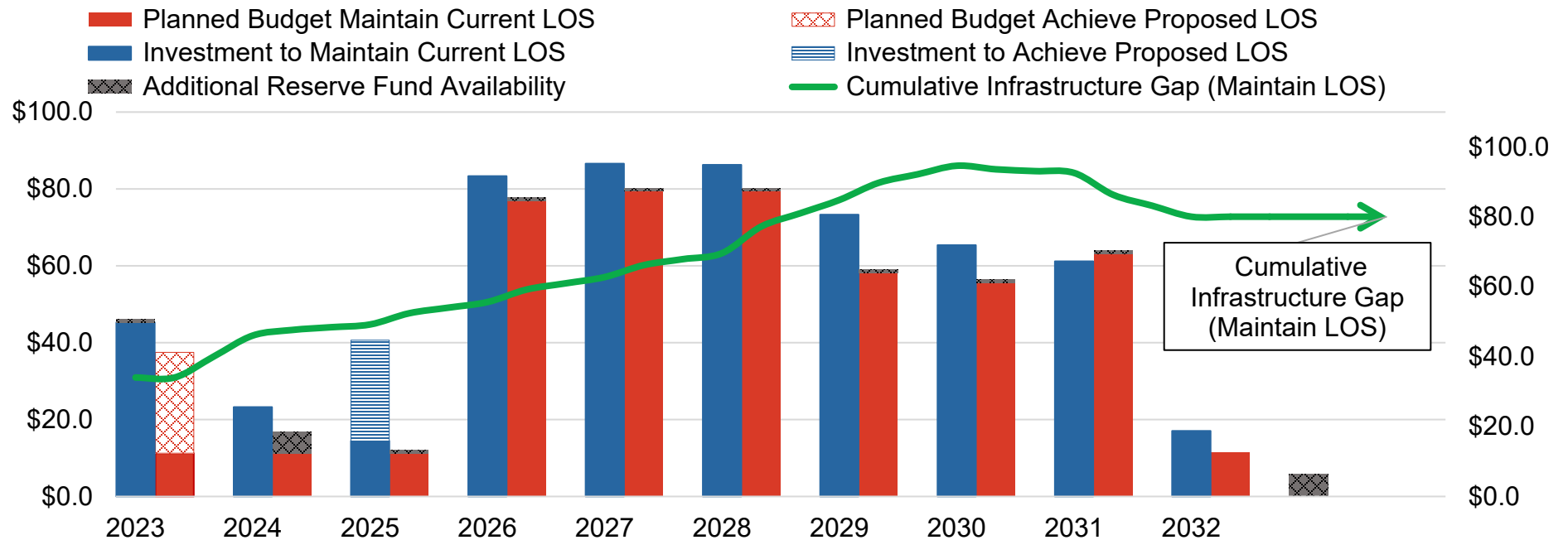


Figure 1.2 10-Year Planned Budget, LOS Investments and Infrastructure Gaps (millions)

Table 1.2 Approved Budget, Maintain Current LOS, and Achieve Proposed LOS Annual Reinvestment Rates

Current Annual Reinvestment Rate (Planned Budget to Maintain Current LOS)	Current Annual Reinvestment Rate (Planned Budget to Achieve Proposed LOS)	Maintain Current LOS Recommended Annual Reinvestment Rate	Achieve Proposed LOS Recommended Annual Reinvestment Rate
9.0%	9.5%	10.9%	11.4%

1.2: Summary of Asset Management Plan Structure

The AMP is designed to provide the reader with a strong functional knowledge of the basis of this report along with the process and data behind the development and results. This is achieved through the following report structure:

- **Introduction** section provides an overview of the provincial and municipal policies that govern asset management reporting requirements and the City's Corporate Asset Management (CAM) Program as well as a summary of the various components of the AMP that culminate together to provide meaningful information that supports asset and budget decisions.
- **Detailed Asset Management Plan** section summarizes the existing asset inventory, its replacement value, condition, age distribution, and how LTC stores its asset data. This section then explores the LOS delivered by the assets, the associated lifecycle management strategies, and activities, and concludes with an analysis of the identified infrastructure gaps and supporting financing strategies.
- **Conclusion and Recommendations** section outlines the findings and observations made throughout the AMP development and reporting process and establishes the recommendations that will be used to guide future asset management activities, subject to Commission approval.
- **Appendix A. O.Reg.588/17 Asset Management Plan Requirements** section encompasses a detailed mapping

of the legislated requirements to the various sections and/or sub-sections of this AMP.

1.3: Executive Summary Conclusion and Recommendations

Conclusion

Based on LTC staff input and asset data, the LTC AMP is a tactical outcome of the City's CAM Program, outlining LTC's plan to manage its \$510.3 million worth of infrastructure, and the required investments in existing infrastructure to meet maintain current LOS and achieve proposed LOS objectives. There are no easy solutions to how the entire infrastructure system works together to achieve an optimal delivery of transit services. But this AMP, among other LTC strategic documents, helps to identify the additional efforts required to address the reported infrastructure gaps.

The 2023 maintain current LOS infrastructure gap of \$34.0 million compared to a \$510.3 million asset base is considered a well managed gap. There is no current 2023 achieve proposed LOS gap as such proposed investments commence in 2024 to align with the City's 2024-2027 Multi-Year Budget (MYB) and Phase 2 Facility Expansion. However, the cumulative 10-year maintain current LOS gap of \$80.0 million requires monitoring. This growth in the infrastructure gaps has the potential to escalate beyond LTC's ability to manage services effectively. As there is no intent to allow this to occur, further action is needed to address both the understanding and forecasted growth of the gaps.

Choices are available as to how LTC manages the infrastructure gaps:

- LTC can continue to deliver services at their current or proposed levels by committing to make required investments thereby mitigating or even eliminating the infrastructure gaps. This funding can come from either tax supported or non-tax supported sources of financing. However, funding sources are limited, thus, LTC must continue to manage its services in an affordable manner with due regard to market prices and staff impacts.
- Paying for the gaps is not the only opportunity. In rare cases, LTC can reduce LOS to match its ability to pay. However, there may be an unwillingness to give up services currently enjoyed and a strong desire to improve services especially given a current service deficit when compared to expectations of residents of the City of London.
- A third opportunity for LTC is to find more efficient and effective ways of delivering services, including changing the asset mix that supports service delivery. When possible, LTC strongly supports this direction and regularly invests in improvements. One element of this third approach is the work underway to enhance asset management practices.

Overall, LTC has a long-standing practice of pursuing all possible means to achieve service delivery goals and has been reasonably successful delivering quality services. In effect LTC adopts a blend of the three approaches outlined and is continuously seeking to improve these strategies.

Recommendations

The City's CAM Program is founded on the principle of continuous improvement with the object of increasing line-of-sight quality of data/information and the tools and techniques that are used to inform services and asset management decision-making. This increased quality will lead to greater confidence in the analysis documented and decisions formed through the AMP and supporting processes.

The Recommendations section of this AMP outlines administrative projects that will enhance the management of and reporting against LTC's \$510.3 million worth of infrastructure assets. These recommendations are structured to address short- and long-term asset management objectives and are categorized according to distinct asset management knowledge areas.

Each of these recommendations will be completed with leading support from the City's CAM staff per the approved asset management service level agreement. There are no additional funding needs associated with the completion of these administrative projects (i.e., initial projects will be completed leveraging existing staff and other resources).



Section 2. Introduction

2.1: Supporting LTC Goals Through the Corporate Asset Management Program

London Transit Commission (LTC) infrastructure systems support a range of conventional and specialized transit services. LTC is responsible for the operation, repair, control, and management of the local transportation system of the municipality on behalf of the City of London. These service delivery results are based on LTC's strategic community and organizational objectives established through the LTC 2019-2023 Business Plan Strategic Plan (noting it is being updated to present to the Commission June 2024), which outlines the mission, vision, values, and strategic outcomes that guide LTC in a way that aligns with the core values of London community. These objectives are¹:

Our Mission

- Moving Londoners – progressively, reliably, and affordably.

Our Vision

- The valued and trusted mobility choice for Londoners.

Values and Guiding Principles

- Fiscal Accountability – ensuring efficient and effective use of investment – supporting sustainable growth while providing positive social, economic and environmental benefits;
- Valued and Respected Community Partner – working collaboratively on a shared vision, effort and success with all community partners;
- Open and Transparent – participating in open and honest communication with all community partners in a clear and timely manner;

- Engaged and Diverse Workplace – attracting, developing, supporting and retaining exceptional individuals resulting in a dynamic and diverse workplace;
- Innovative – fostering a culture of continuous improvement through effective use of resources and technology;
- Customer Focused – striving every day to improve the customer experience;
- Reliable Infrastructure – acquiring and effectively maintaining environmentally friendly infrastructure in support of the consistent delivery of a quality service.

Strategic Outcomes

- An integrated, affordable and valued mobility choice;
- An engaged, diverse and respectful workplace;
- Demonstrated fiscal accountability;
- Being open, transparent and understood;
- Effective utilization of infrastructure.

The City's CAM Program is designed to enhance the management of the infrastructure assets (both City of London and Agencies, Boards, and Commissions assets) in a way that connects strategic objectives to day-to-day decisions related to when, why, and how investments are made into infrastructure systems. Like the strategic planning and budgeting processes, this is an iterative process that continuously improves through each cycle. For further information regarding the CAM Program refer to the City's CAM Policy².

This AMP was developed through the City's CAM Program based on an approved Service Level Agreement between LTC and the City. By following this development process the AMP achieves the following:

¹ <https://www.londontransit.ca/wp-content/uploads/2023/05/2019-2022-Business-Plan-Final.pdf>

² CAM Policy <https://london.ca/council-policies/corporate-asset-management-policy>

- Sets out the plan for managing the infrastructure assets to ensure they can provide services at levels that meet the community and Commission approved objectives.
- Forecasts the expected impact that the 2023 annual budget update, inclusive of 2023-2032 capital plan (hereon referred to as “planned budget”), will have on the state of the infrastructure assets.
- Understanding of the changes in lifecycle strategies and associated risks if there are funding gaps between the planned budget and the expenditures required to maintain current LOS or achieve proposed LOS.
- Fulfill O. Reg. 588/17 mandated requirements and maintain eligibility for current and future other levels of government capital funding programs.

2.2: Provincial Asset Management Planning Requirements

In 2016, Ontario introduced a requirement for municipalities to complete an asset management plan that includes all categories covered by Ontario provincial Gas Tax Fund. This resulted in LTC completing its inaugural AMP noting it predated O. Reg 588/17 requirements. Thus, this second AMP is a continuation and expansion of LTC work which began in 2016.

This AMP builds upon existing LTC asset management activities and leverages others that have been developing since the establishment of the City’s CAM department and CAM Program and LTC’s initial AMP. London’s legislated asset management journey began in 2008 when Canada’s Public Sector Accounting Board (PSAB) established new requirements for municipalities to practice tangible capital asset (TCA) accounting. This accounting process resulted in the development of the first comprehensive inventory of all assets owned by the City (both directly and non-directly owned assets). In 2012, the Province

then published ‘Building Together: Guide for Municipal Asset Management Plans’ to encourage and support municipalities in Ontario to develop AMPs in a consistent manner.

Building Together outlines the information and analysis that municipal asset management plans are to include and was designed to provide consistency across the province for asset management. To encourage the development of AMPs, the Provincial and Federal governments began to frequently make AMPs a prerequisite to accessing capital funding programs.

In 2015, Ontario passed the ‘Infrastructure for Jobs and Prosperity Act’, which affirmed the role that municipal infrastructure systems play in supporting the vitality of local economies. After a year-long industry review process, the Province created O. Reg. 588/17 under the *Infrastructure for Jobs and Prosperity Act*. O. Reg. 588/17 further expands on the Building Together guide, mandating specific requirements for municipal asset management policies and AMPs.

Among others, these requirements mandated:

- Municipalities to complete Council approved and publicly available AMPs for all assets presented on the consolidated financial statements, excluding Joint Water Boards. It is noted LTC financial are consolidated within the City’s financial statements. The following dates are provincially required:
 - By July 1, 2024, the O. Reg. 588/17 requires an AMP that documents the current LOS being provided, the costs to maintain them, and the financing strategy to fund the expenditures necessary to maintain current LOS for all infrastructure systems in the City.
 - By July 1, 2025, the O. Reg. 588/17 requires an AMP that documents the current LOS being provided and the costs to maintain them, the proposed LOS and the

costs to achieve them, and the financial strategies to fund the expenditures necessary to maintain current LOS and achieve proposed LOS for all infrastructure systems in the City.

- That these AMPs be updated annually and comprehensively reviewed and updated every 5-years.

For a complete reconciliation and mapping of how this AMP complies with all O. Reg. 588/17 requirements (both July 1, 2024, and July 1, 2025, requirements) see Appendix A. O.Reg.588/17 Asset Management Plan Requirements.

2.3: Developing the Asset Management Plan

This AMP is the culmination of efforts from staff across the LTC who are involved with managing infrastructure assets, including finance staff, technical staff involved with planning and executing the construction and maintenance of infrastructure assets, and on-the-ground staff who operate and maintain infrastructure assets. Through this collaborative development process the AMP addresses the following questions:

- What do we own and why?
- What is it worth?
- What condition is it in?
- What are its current and proposed service levels?
- What activities do we employ to manage the assets?
- What does it all cost?

A more modern asset management question is also to ask, “Is this asset providing the community the service it expects and is willing to pay for?”

To answer these questions as best as possible, the CAM Program and this AMP are structured based on several interdependent development strategies that support answering or providing insight into the responses to these questions.

These development strategies and processes (steps) are categorized as:

- State of Local Infrastructure
- Levels of Service
- Asset Lifecycle Management Strategy
- Forecasted Infrastructure Gaps and Financing Strategies
- Discussion and Conclusion

To enhance readers understanding of the data and information presented, the following explanations are provided regarding each development strategies purpose, processes, and results.

2.3.1: State of Local Infrastructure

The State of Local Infrastructure is the initial building block of the AMP and is intended to provide the following information:

- Inventory of assets – What do we own?
- Valuation of assets (replacement value) – What is it worth?
- Age and expected useful life of assets – How old is it and when does it need to be replaced?
- Condition of assets – What Condition is it in?

This information is a fundamental building block of an AMP and LTC inform future management of infrastructure assets based on individual and collective needs.

It is important to note replacement values seek to utilize best available information to identify all asset costs associated with replacing assets. As such this AMP reflects capital financing pressures that go beyond what can be accommodated in the LTC 2023-2032 planned budget.

A sample of the capital financing pressures captured in the AMP are:

- Inflation - the rising cost of goods and services can put additional strain on the budget for infrastructure projects to maintain current LOS,
- Climate – addressing the impact of climate change and implementing climate-related initiatives can require significant financial resources,
- Achieve Proposed LOS – meeting the desired LOS may require additional investments in existing or new modernized infrastructure, and
- Aging Infrastructure – the need to upgrade or replace versus rehabilitating aging assets can contribute to capital financing pressures.

Additionally, due to evolving legislative changes and ongoing CAM Program development and implementation, the following capital financing pressures have not been fully analyzed, but are summarized here to provide information regarding potential future amendments:

- Growth – as the city expands and develops, additional infrastructure investments will be required to support the increasing population and demands, and
- More Homes Built Faster Act, 2022 – legislative changes may impact the City's funding of growth costs.

By acknowledging capital financing pressures and considering both current and future challenges, the AMP sets the foundation for strategic infrastructure planning and LTC to prioritize and address infrastructure needs effectively.

2.3.2: Levels of Service

Asset related LOS are specific parameters that describe the extent and quality of asset related services; they are not an exhaustive presentation of all service levels provided to the community. These LOS link an asset's performance to target performance goals associated with LTC's strategic plans, budgets, and other relevant policies and reports. Additionally, in accordance with O. Reg. 588/17 requirements, these LOS are quantified and reported between the costs to maintain current LOS and achieve proposed LOS, which are defined as:

- **Maintain Current LOS** – is defined as the persistent efforts of an organization to manage its assets through comprehensive lifecycle activities and effectively allocating necessary financial resources with the aim of consistently delivering its services at the current established service levels.
- **Achieve Proposed LOS** – is defined as the strategic initiatives undertaken by an organization to modify its service levels represented in a new proposed standard of service provision. This could involve modifying the condition, scope, or accessibility of the services beyond their current levels, based on strategic goals (e.g., regulatory requirements, master plans, other Commission approved targets, etc.). The achievement of these proposed service levels may require changes in quantity of assets and/or frequency and scope of asset related lifecycle activities.

LOS metrics are organized in a hierarchical manner. At the forefront are the direct LOS metrics, which serve as the primary benchmarks. From these, we can provide clear lines-of-sight to determine the cost to maintain current LOS and achieve proposed LOS. Next in line are the related LOS metrics. These are closely tied to the direct LOS metrics due to their primarily

formal relationship. However, pinpointing their associated costs can be more intricate.

Overall, LTC strives to provide services to the community that are accessible, cost efficient, provide customer satisfaction, demonstrate environmental stewardship, reliable, and safe, with suitable scope. As shown in Figure 2.1, to obtain a desired LOS, LTC faces a complex trade-off challenge, which includes three parameters: Cost, LOS, and Risk.

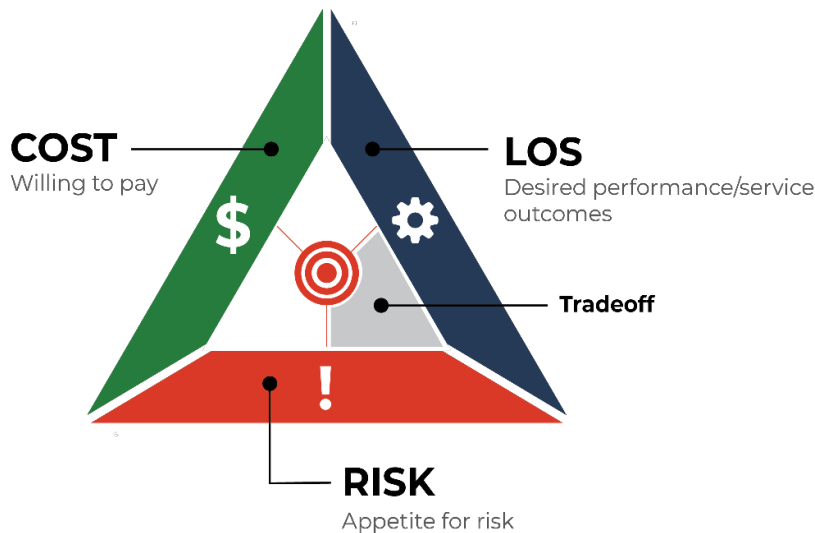


Figure 2.1 Trade-off Cost, Risk, and LOS

2.3.3: Asset Lifecycle Management Strategy and Activities

The asset lifecycle management strategies are the set of planned actions that will enable the assets to provide the approved LOS in a sustainable way, while managing risk, at the lowest lifecycle cost possible.

This part of the AMP describes the asset lifecycle activities applied to the assets. This includes the typical practices and actions, and risks associated with each asset activity. From here three scenarios that forecast the condition profile of the asset

portfolio based on planned budget, the required budget to maintain current LOS, and the required budget to achieve proposed LOS are provided.

2.3.4: Forecasted Infrastructure Gaps and Financing Strategies

In this part of the AMP identified infrastructure gaps are summarized and illustrated in both table and figure format. The infrastructure gaps are a dollar amount based on the difference between:

- The amount of money that needs to be spent on assets to maintain current LOS and achieve proposed LOS for the community, and
- The amount of funding presently identified in the planned budget and capital reserve fund over a 10-year period (2023-2032).

In other words, what LTC plans to spend versus what the asset needs are. Ideally, the infrastructure gaps decline over time as greater investments are made to replace older infrastructure, to improve the condition of infrastructure, to minimize the risks associated with failing assets, and to acquire new infrastructure.

Next are the infrastructure gap financing strategies, which set out the approach to ensuring that appropriate funds are available to facilitate the delivery of infrastructure dependent services. These strategies are meant to strengthen current budgeting processes by reinforcing a long-term perspective on the impact of providing various asset-related LOS and the required investments versus the affordability to the community, which is consistent with the outcomes and expected results of the 2019-2023 LTC Business Plan and 2023-2027 City of London Strategic Plan.

2.3.5: Discussion and Conclusion

The discussion part of the AMP looks at current and future opportunities and challenges associated with addressing infrastructure gaps. This discussion includes opportunities and challenges that are both in and outside of the control of the Commission. Among others, this includes consideration of service delivery characteristics, cost pressures, and growth and service improvement planning.

The final element of the detailed AMP is the conclusion section. In this section the results are summarized and to facilitate interpretation of the AMP data accuracy and data reliability ratings with supporting commentary are provided. The goal is to transparently provide the reader with knowledge of the validity and limitations of the information provided and to highlight continuous data improvement plans.

2.4: Assumptions and Limitations

As previously stated, this AMP is designed to enhance the management of LTC infrastructure assets in a way that connects strategic objectives to day-to-day decisions related to when, why, and how investments are made into infrastructure systems. However, all AMPs are developed within the context of various assumptions and limitations.

The following points summarize the assumptions and limitations of this AMP:

- AMP scope covers directly owned LTC assets as of December 31, 2022, and associated planned budgets approved in the 2023 annual budget update. Thus, timing differences exist between when this AMP was developed versus current 2024-2027 MYB approvals. Based on O. Reg. 588/17 requirements these differences are permissible and are minimized through the AMP annual update process as well as the CAM Program continues to explore opportunities to limit such timing differences.

- This AMP is compliant with the July 2024 and July 2025 requirements of O. Reg. 588/17 in that it encompasses both maintain current LOS and achieve proposed LOS as well as associated forecasted infrastructure gaps and supporting financing strategies.
- The AMP addresses condition information in three ways:
 - Condition may be technically assessed and reported on in a quantifiable technique. This method is the most accurate and most expensive (e.g., facilities condition);
 - Condition may be assumed based on age and estimated useful life; and
 - Finally, condition may be based on the expert opinion of staff using the asset.
- Unexpected events (e.g., severe storms attributed to climate change, pandemics, etc.) will not disrupt infrastructure replacement and renewal projects over the period of analysis.
- The planned budget and expected reserve fund availability, will occur as planned over the 10-year period of analysis. This assumes the Highbury facility expansion is fully funded. It also assumed that Zero Emission Bus (ZEB) Pilot Program needs are fully funded.
- LTC is listed within the current City 2021 Development Charges Background Study and growth budgets as listed are deemed sufficient to meet growth needs.
- Although final direction has not been provided by Council, this AMP assumes that LTC will operate the new bus rapid transit (BRT) service once the project is completed, noting construction is ongoing at time of AMP.
- ZEB Implementation Strategy is not Council approved at time of writing thus any preliminary costing is not reflected in this AMP.



Section 3. Detailed Asset Management Plan

3.1: State of Local Infrastructure

3.1.1: Asset Inventory and Valuation

The London Transit Commission (LTC) is a corporate body with the powers, rights and privileges vested in it by the City of London Act (Bylaw A-6377-206). Through this policy, LTC is responsible for the operation, repair, control, and management of the local transportation system of the municipality. This includes conventional transit and transportation for the physically disabled. LTC and City Council consults regularly on local transportation system policy and on the general administration and affairs of LTC in relation to general municipal policy and the administration and affairs of the City of London.

London Transit Commission has a rich history in its 149 years of existence. This is reflected in the asset base, which started with approximately 20 years of horse drawn cars, to electric powered cars introduced in 1914. The entity which became LTC had its own generating plant until 1923. The City of London purchased the LTC forerunner in 1951 and named it London Transportation Commission. LTC moved to its current Highbury Avenue location in 1972. Provincial and municipal subsidization allowed a major fleet route and service expansion in 1972, and the first accessible buses began in 1998. Finally, the provincial and federal governments commit to gas tax funding for public transit in 2005³. These themes of electrification, multilevel government support, accessibility, and service expansion are relevant to LTC operations today and are reflected in the current facility and fleet asset base, and the expected facility expansions in the next 10 years, with complementary potential fleet electrification.

Current estimates are 19 million passengers use LTC services each year. 231 buses, with 2,200 bus stops, 104 garage and maintenance employees, 482 operators, inspectors, and dispatchers, and 681 bus shelters are required to maintain current service levels.

The assets required to allow these services have an approximate replacement value of \$510.3 million. This primarily relates to the LTC Land, Facilities, and Fleet, but also includes a variety of Information Technology, and Other Facilities Assets.

Table 3.1 summarizes the assets by type, inventory, quantity, and replacement values. The asset replacement values have been identified using different LTC databases including LTC's accounting software system SAGE – Platinum for Windows, underlying work in considering a transition to Facilities-specific Management software (such as VFA), and internal expert opinion. These replacement values aim to capture current market prices for the full replacement of identified assets. For further information regarding costing refer to Section 2 Introduction.

Figure 3.1 provides an outline of LTC routes based on data from LTC website. It is intended to give an 'at a glance' sense of the scope of LTC's routes⁴. It is noted the map is effective as of April 2024 but also service routes are reviewed and potentially updated September of each calendar year.

³ <https://www.londontransit.ca/ltc-history/>

⁴ <https://www.londontransit.ca/open-data/>

Table 3.1 Inventory and Valuation

Asset Type	Asset	Inventory	Unit	Replacement Value (Thousands)
Land	450 Highbury Ave N and 3508 Wonderland Road N	10.8455	Hectares	\$5,414 ⁽⁵⁾
Facilities	Transit Facilities, Administration offices, Storage and Maintenance, etc.	13	Each	\$261,621
Fleet	Rolling Stock (40 Foot Diesel Bus, 40 Foot Hybrid Bus, 60 Foot Articulated Diesel Bus)	231	Each	\$205,678
	Service Fleet (Inspector Vans, Pickup trucks, Cargo, and Transit Vans)	11	Each	\$730
	Other Fleet Assets (Tools, Lifts, Compressors, Skids, Hydraulic Presses, Bus Washes, etc.)	Mix	Each	\$6,999
Information Technology	Computer Hardware	Mix	Each	\$1,322
	Computer Software	5	Each	\$1,277
	Fare Equipment	237	Each	\$8,095
	Data Collection Equipment	Mix	Each	\$1,054
	Radio/Communication Equipment	Mix	Each	\$13,039
Other Facilities	Shelters	681	Each	\$3,299
	Pads	2,001	Each	\$966
	Terminals and Signs (6 Terminals with 10 Wayside Signs)	16	Each	\$800
Total				\$510,294

Additional details relating to each asset type are provided.

Land

LTC's original asset management plan for provincial gas tax requirements listed land, thus it is listed using historic cost and adjusted for inflation.

Facilities

Valued at over \$261 million, from a replacement value perspective LTC's building and sitework represent over half of assets under management. LTC has two locations – Highbury and Wonderland. Both locations include a mix of maintenance garages, storage facilities, Fleet body shops, administrative

offices, and salt sheds, noting Highbury is the significantly larger location.

LTC has relied on Highbury headquarters for over 52 years, noting that facility rehabilitations and renewals indicate an effective age of 43 years. While the facilities are considered functional, they are not meeting a modern level of service that incorporates an electrified fleet and associated infrastructure (charging stations, appropriate personnel to maintain specialized fleet assets, etc.). As will be explained and referenced throughout Section 3, particularly Lifecycle Management Scenario Forecasts – Planned Budget, Maintain

⁵ Land replacement value based on historic cost inflated by Statistics Canada Consumer Price Index.

Current LOS, and Achieve Proposed LOS, Highbury location is undergoing a two-phase approach to rebuild and modernize its location to increase the facility square footage and have modernized infrastructure. Regardless if the facility will support a Fleet that has Zero Emission Buses (ZEB) the facility expansion is required.

Fleet

Fleet is comprised of three asset categories – Rolling Stock, Service Fleet, and Other Fleet Assets. Rolling Stock approximates \$206 million and has 209 40-foot diesel buses, 8 40 foot hybrid buses, and 14 60 foot articulated diesel buses.

Service Fleet is primarily vans for inspection or maintenance, and trucks for LTC on-site use.

Other Fleet Assets are a range of assets to maintain Fleet, ranging from annual small tool purchases, bus platforms, floor scrubbers, lifts, hydraulic hoists, compressors, hoist rebuild, safety stands, work well saddles. Given the high volume of small tools that are purchased en-bloc, the asset count is identified as mixed. While these assets may be a relatively small percentage of total replacement value, they are critical to having safe and functional Fleet assets needed by LTC users.

Information Technology

Information Technology approximates \$24.8 million in replacement value and is split between Computer Hardware, Computer Software, Fare Equipment, Data Collection Equipment, and Radio/Communication Equipment.

Computer Hardware and Software represent en-bloc listings of monitors, computers, servers, laptops, etc. used by LTC staff. Software represents LTC website, Routematch transit scheduling software, operator timekeeping software, payroll software, and Kronos software to support timekeeping system.

Fare Equipment relates to Fareboxes, smart card systems for users to pay entry into Rolling Stock, while Data Collection equipment relates to Automatic People Counter to track as riders leave a Rolling Stock asset.

Radio and Communication Equipment relates to vehicle tracking systems and equipment, cameras, and communications systems.

Other Facilities Assets

Approximating \$5.0 million, shelters, pads, and terminals relate to shelters while transit riders await the arrival of Rolling Stock, larger Terminals to support dropoff of riders at larger locations (including Fanshawe College, Argyle Mall, White Oaks Mall, Westmount Mall, Masonville Mall, and Western University, with 8-Line signs required) or concrete pads required at various locations throughout the City.

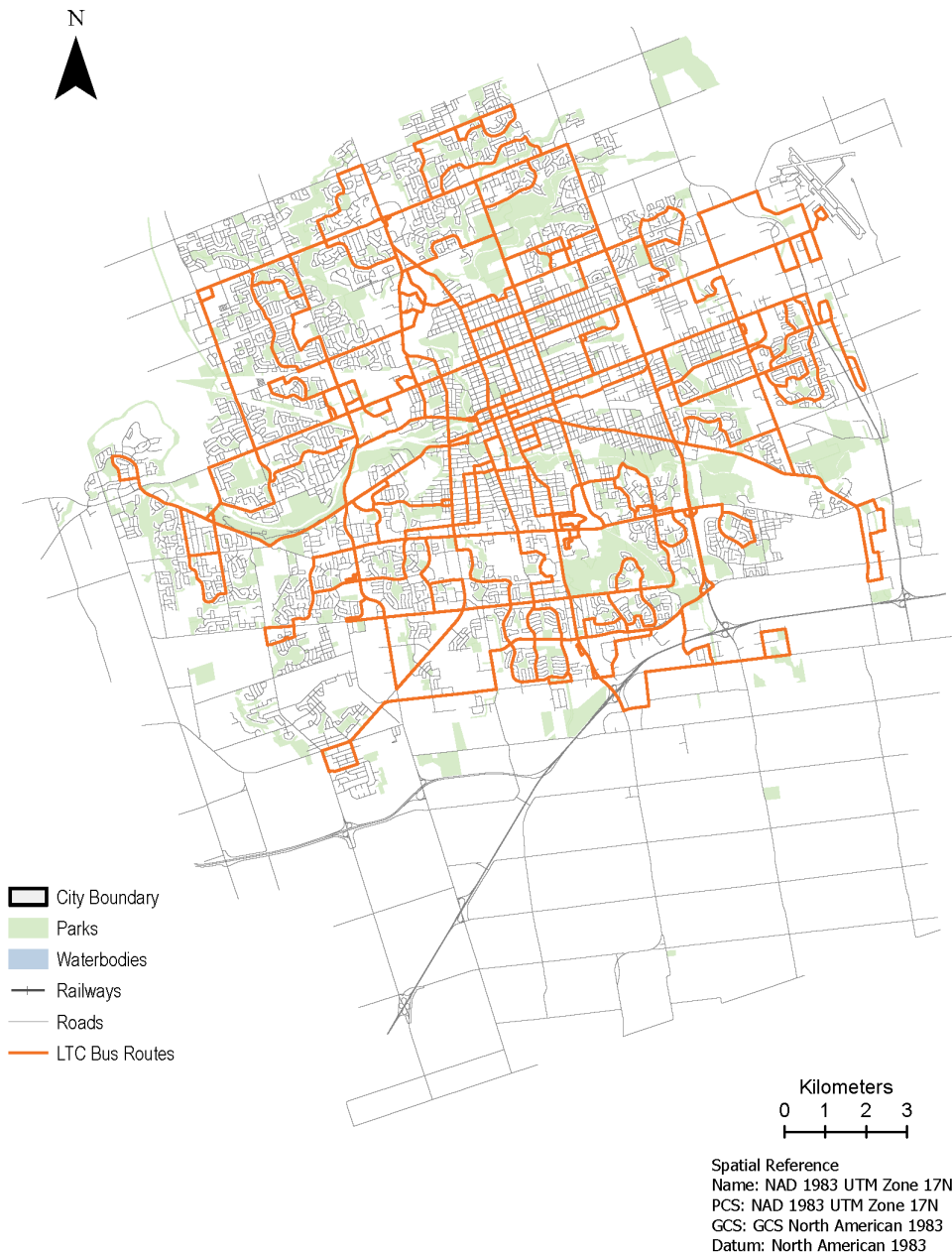


Figure 3.1 London Transit Commission Bus Routes and Stops

3.1.2: Age Summary

Figure 3.2 shows the LTC average asset age as a proportion of the average expected useful life. This comparison provides a visual representation of how close assets are to the ends of their lifecycle, which demonstrates LTC's ability to replace such assets on-time. Overall, the data affirms that, excluding facilities and certain IT assets, LTC assets are within their expected useful life. It is noted that lifecycle activities must continue over a 10-year period to ensure the age distribution would remain under expected useful life targets, or be enhanced.

Land age is unknown and thus not listed.

Facilities

The age of the facility was calculated using historic records and internal expert opinion, which will inform a potential transition to a facilities asset management software such as VFA. Overall facility assets average age is three years older than the standard expected useful life of 40-years. This leads to an increase in the operation and maintenance cost of the facility. It is important to note that 40-years was selected as the expected useful life based on the non-structural components of buildings which have the longest expected useful life. In practice the many components that comprise a building are slated for renewal based upon a combination of factors including age, condition, consequence of failure, likelihood of failure, etc., and the practical expected useful life is largely indefinite while the building continues to serve its intended/required purpose in its given geographic location.

Nevertheless, the age of LTC facility assets and the evolving demands and best practices of service delivery have given rise to the need for comprehensive facility assessments and asset management industry best practices. Facility assessments at LTC have been ongoing with a study performed in 2006 which

resulted in the completion of the satellite facility on Wonderland Road. A study for the Highbury facility was undertaken in 2019 that was subsequently updated in 2023 and now forms the basis of the 2024-2027 MYB business case #P-60 – London Transit Commission Project 2 Highbury Facility. Further details and financial impacts of these assessments and industry best practices are provided in Section 3.3 Asset Lifecycle Management.

Fleet

Rolling Stock is halfway between the average expected useful life of 12 years. This is consistent with the expectation that newer purchases would average out against assets nearing end of useful life and the strategy employed by LTC to purchase new Rolling Stock, compared to other transit commissions potentially relying on purchasing used stock. Section 3.3 lifecycle management strategies further expands on LTC Fleet strategies.

Service Fleet is two-thirds through their expected useful life of 6 years, noting these are support vehicles used by LTC staff to support public assets.

Other Fleet Assets are approximately two-thirds through their expected useful life. Longer lasting assets like winches and hydraulic presses on a weighted average basis account for the longer asset life expectancy, noting items such as small tools are shorter lasting with approximately 5 years EUL.

Information Technology

IT hardware and software, fare equipment, data collection equipment, and radio and communication equipment are based upon internal expert opinion corroborated with review of data tracked within LTC's accounting systems. Computer hardware and software are at or near the end of their expected useful life. Fare equipment and radio equipment are approximately two thirds through their expected useful life. Data collection equipment is approximately one third through its expected useful life. As expanded upon in the lifecycle management section, this indicates needs within the medium term (i.e. within three to five years of the total projected 10-year period of analysis).

Other Facilities Assets

Shelters, Pads, and Terminals are approximately halfway through their expected useful life, which suggests investment will be required in the short to medium term.

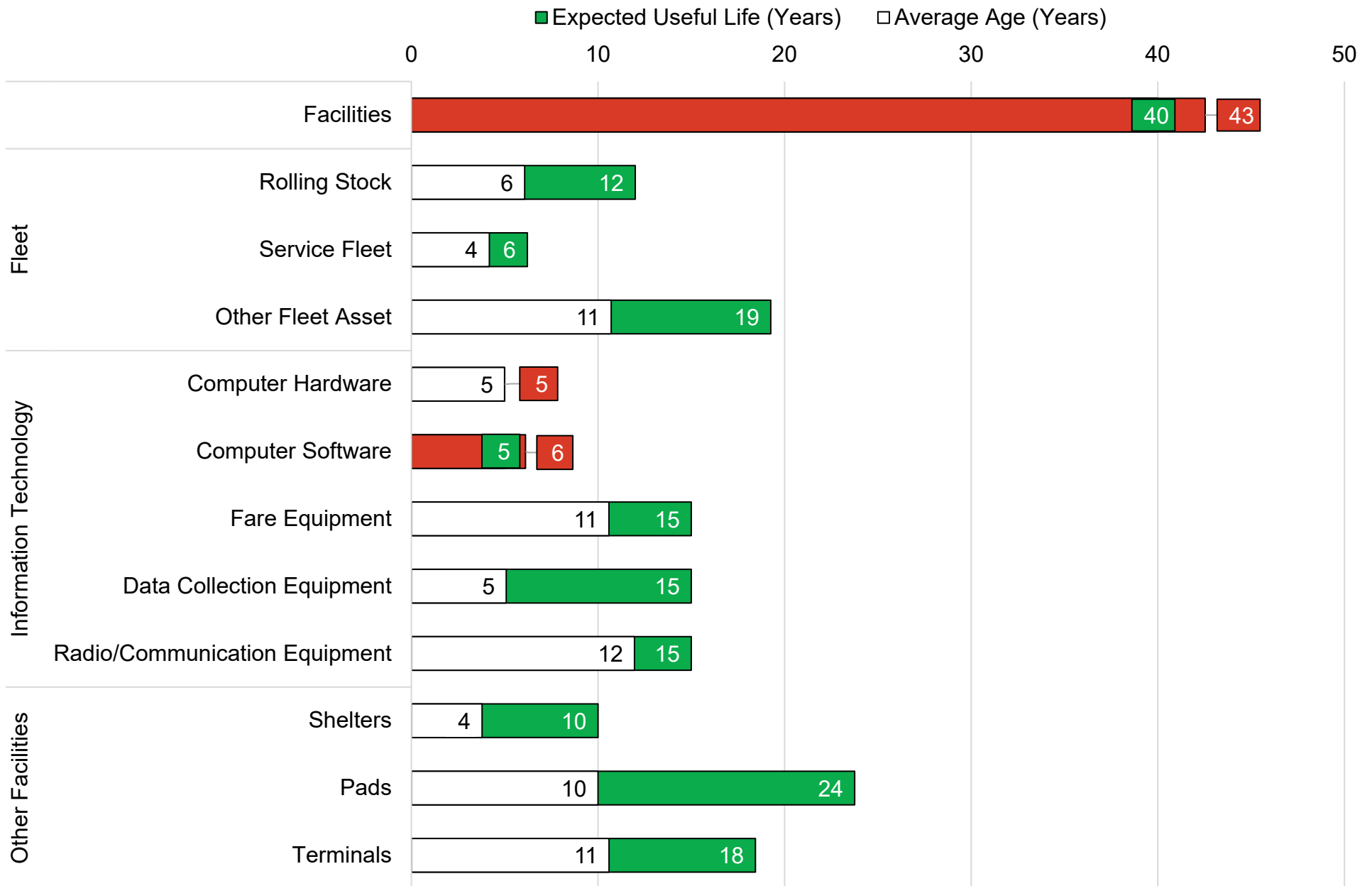


Figure 3.2 Average Age and Expected Useful Life

3.1.3: Asset Condition

The condition of the assets was determined using one of the three methods below based on data availability and accuracy:

1. Existing condition rating systems (e.g., Facility Condition Index, etc.),
2. Estimated based on age and the remaining expected useful life of the assets, and
3. Estimated based on expert opinion, in the absence of 1 or 2 above, or where there was low confidence that age and

expected useful life appropriately represented the asset condition.

Based on these methodologies, asset conditions are recorded on a ratings scale of 1 to 5. Table 3.2 provides the definitions of each condition scale used in the CAM Program and in this AMP. Land condition is not typically assessed and thus not listed.

Table 3.2 Condition and Scale Definitions

Grade	Summary	Definition
1	Very Good Fit for the future	The infrastructure in the system or network is generally in very good condition, typically new or recently rehabilitated. A few elements show general signs of deterioration that require attention.
2	Good Adequate for now	The infrastructure in the system or network is in good condition; some elements show general signs of deterioration that require attention. A few elements exhibit significant deficiencies.
3	Fair Requires attention	The infrastructure in the system or network is in fair condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4	Poor At risk	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5	Very Poor Unfit for sustained service	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service.
-	Not Assessed	This category is reserved for assets where data is either missing, not updated, or cannot be considered reliable. Flagging this data for LTC to identify where gaps in information exist and may allow for the development of assessment plans to improve future data.

Figure 3.3 presents the overall condition distribution of all LTC assets. It shows that approximately 72% of the assets are in Very Good to Fair condition. However, it is important to note this condition profile is only a snapshot in time and not indicative of condition profiles over the next 10 years.

Pressures do exist and are reflected in multi-year budget requests and further described in Sections 3.3 and 3.4. In addition, there are pressures that are beyond scope of a

traditional condition profile. For example, transitioning Fleet assets to a Pilot ZEB test are being pursued not strictly to improve asset condition but also climate, environmental issues, and modern practices suitable for a transit system of the size and complexity of LTC.

Figure 3.4 provides a detailed condition distribution for Facilities, Fleet, IT Equipment, and Other Facilities assets.

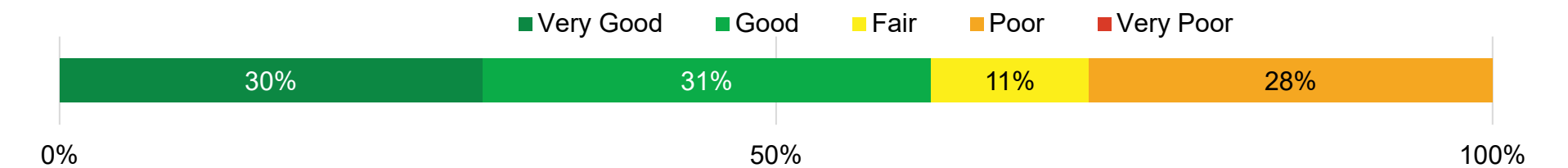


Figure 3.3 Overall Condition

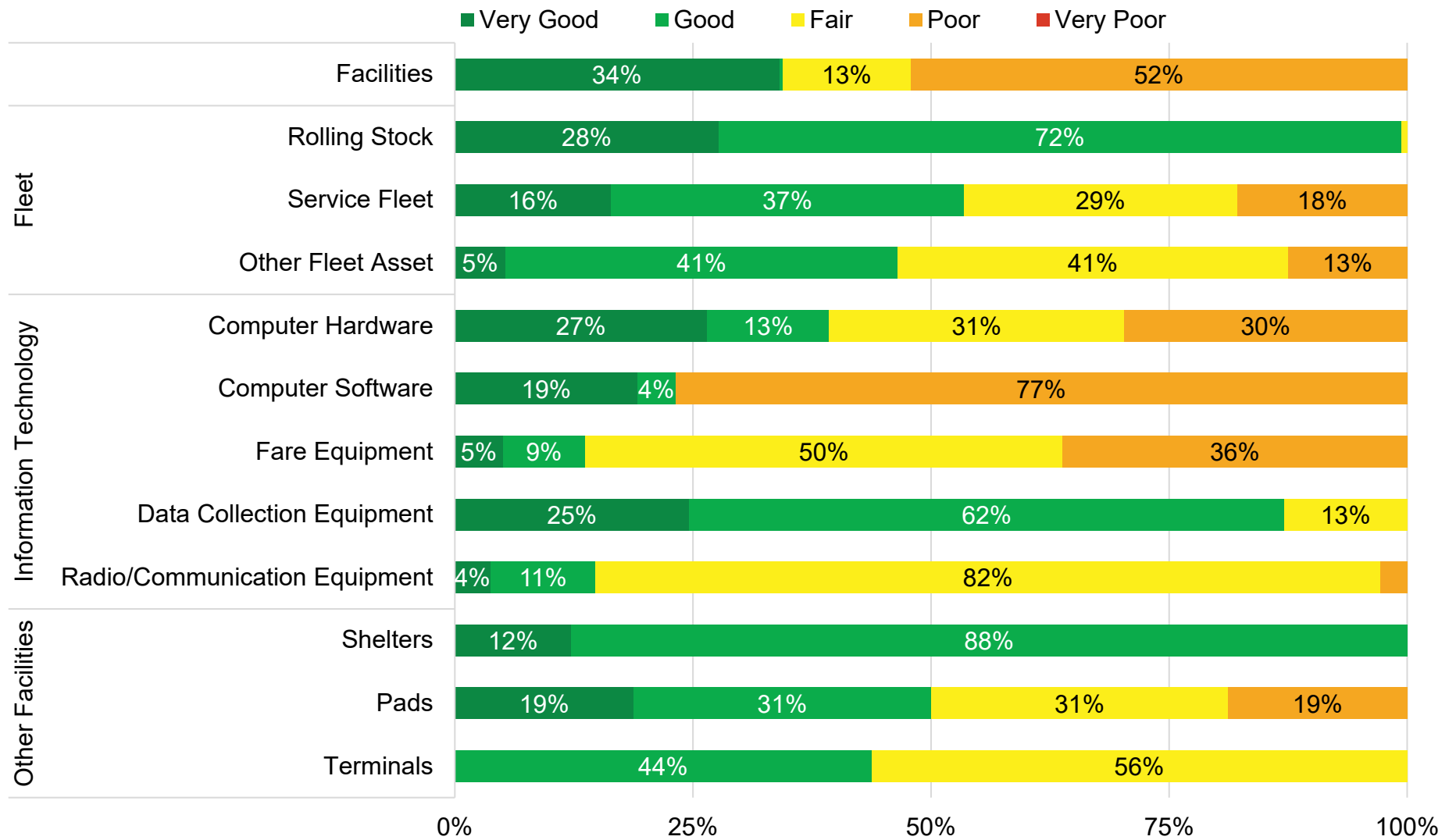


Figure 3.4 Asset Condition Detail

Facilities

The LTC facility experts regularly perform comprehensive assessments, which inform internal expert opinion facility condition. The extensive internal expert opinion will assist the potential transition to tracking information in asset management software (such as VFA) to establish and update an industry-standard Facility Condition Index (FCI) that reflects the overall condition of the facility and their sub-components (building envelope, mechanical and electrical systems, etc.). This transition would be dictated based on staffing and financial resources but would complement how Highbury facilities will be rebuilt and significantly upgraded starting in 2025 and assist 'from the go' as the facility maintenance transition to the new layout. These assessments and interactions with supplemental consultant will become the primary source in identifying the repair, rehabilitation, and/or replacement strategies for each asset. Note the facilities condition ratings present the physical condition of the buildings and are not a representation of the functionality required to satisfy LTC service delivery (i.e. size, location, ability to accommodate certain types of functions, etc.).

The current condition assessment identifies that 47.9% of facility assets are in Fair or better condition. In the context of transit service delivery, such a material amount of facility assets in Poor condition is indicative of rehabilitation or repair needs. Given LTC needs for modern and larger facilities, there will be identification of sufficient rehabilitation or renewal needs to keep the current facilities functional while new construction begins in 2025. As mentioned earlier, significant pressures do exist and are reflected in multi-year budget requests and further described in Asset Lifecycle Management and Forecasted Infrastructure Gaps and Financing Strategy. Facility conditions of note are the Highbury location which is in Poor condition.

Fleet

99.5% of assets are Fair and above condition, which is considered a required condition profile given the need for safe transportation for LTC users. Given Rolling Stock (comprising nearly all of replacement value) of 12 years are approximately halfway through their typical lifecycle, and how Rolling Stock assets would typically be Fair or greater condition suggests reinvestment is required in the short to medium term (i.e. reinvestments occurring over the next 10 years). Service Fleet has a greater range of condition, which is consistent with how certain assets are for on-site use for LTC staff only. Other Facility Assets have shorter lasting assets which account for the varied condition profile.

Information Technology

81% of IT assets are in Fair or above condition. IT asset conditions were evaluated based on internal expert opinion and industry standards. Computer hardware and software and Fare Equipment having significant portions of their respective assets in poor condition suggests reinvestment in the shorter term. Performance and condition concerns of IT assets are captured on a proactive basis through problems reported by staff and the nature of transit services would quickly identify any issues with IT infrastructure.

Other Facilities Assets

Over 96% of Other Facilities assets are Fair and above condition, however pads with 19% of assets in Poor condition suggests reinvestment is required in the short to medium term.

3.2: Levels of Service

Asset management LOS link strategic plans and budget service delivery objectives to corresponding asset performance metrics. As such this AMP strives for LOS performance measures linked to:

- LTC 2019-2023 Business Plan,
- LTC's Zero Emission Bus Fleet Implementation Framework,
- 2023-2027 City of London Strategic Plan,
- 2023 Annual Budget Update.

These LOS foundations guide the establishment of customer service deliver values (herein referred to as "customer values"),

which in turn guide the development of overarching AMP LOS objectives. Informed by these objectives, LTC and CAM staff collaborate to formulate effective metrics that can be linked to asset performance. Table 3.3 lists the LOS customer value definitions created through this development process.

The selection and development of meaningful LOS linked to decision making and cost, requires a long-term continuous improvement methodology. Thus, the LOS used in the 2024 LTC AMP are focused on traditional asset management metrics like reinvestment rate and condition. Continuous effort will be made towards expanding costed LOS as part of future LTC AMP development processes and practices.

Table 3.3 Customer Values Definition

Customer Value	Corporate Definition and Description
Accessible	Service is accessible by the community, not exclusive, it is inclusive to those who wish to/may use the service to the greatest extent possible, regardless of age, ability, etc. Includes metrics related to asset accessibility and legislated requirements. For example, <i>Accessibility for Ontarians with Disabilities Act (AODA)</i> .
Cost Efficiency	Presents service area budgets, and where possible measures financial performance in terms of providing the maximum service outcomes (more output for less cost) out of the available operating and capital budgets. Examples include annual cost to provide the service, asset lifecycle budget as a percentage of current replacement value.
Customer Satisfaction	Service is satisfactory/meeting expectations from the perspective of a customer or community. Includes a diversity of metrics that cover the performance of a service based on customer experiences. Metrics consist of descriptions from customer surveys and the like. Example includes percentage of customers satisfied with assets or service delivery.
Environmental Stewardship	Service is provided in a means that considers, controls, or reduces impacts to the environment. Includes metrics related to the assessment of service provision based on environmental stewardship and sustainability practices. Examples include annual monitoring of utility usage by square footage of facility space, or fuel consumption-based greenhouse gas emissions.
Reliability	Service is fit for its purpose. Includes metrics related to the reliability of services such as condition of assets.
Scope	The service is extended to/covers a defined range, or description of the range of service provided through municipal infrastructure assets. Includes, among other measures, maps of the user groups or areas of the municipality that have availability of municipal services, are connected to the municipal water system, or have fire flow access, etc..

Direct and Related LOS

Selected LOS metrics are organized in a hierarchical manner. Direct LOS metrics are the primary benchmarks. These can readily determine the cost to maintain current LOS and achieve proposed LOS. Next are the related LOS metrics, which are closely tied to the direct LOS metrics but in some cases cannot

be readily costed. After review with LTC staff, direct LOS considered most representative of asset-based services and able to be costed over a 10-year projected period (2023-2032) are documented as in Table 3.4, and the support related LOS are documented in Table 3.5.

3.2.1: Direct Levels of Service

Table 3.4 Direct Levels of Service

Customer Value	Focus	Service Performance Measure	2022 Performance	Proposed Target (2022 to 2031)
Cost Efficiency	Technical	Overall reinvestment rate	9.5%	10.9% to 11.4%
Environmental Stewardship	Technical	Annual facilities electric energy consumption, kilowatt-hour per square foot	22.1 kWh/sf	Positive Downwards
		Annual facilities natural gas consumption, cubic meters per square foot	4.7 m3/sf	Positive Downwards
		Annual facilities water consumption, cubic meters per square foot	0.03 m3/sf	Positive Downwards
		Annual greenhouse gas emissions per Rolling Stock asset (231)	75.5 tonnes per year per Rolling Stock asset	Positive Downwards
Reliability	Customer	Percentage of LTC assets in Fair or better condition	71.8%	Maintain current
		Percentage of Fleet Rolling Stock in optimum service life ⁶	99.4%	100%
	Technical	Average Rolling Stock bus age (years)	6.0	Maintain current

⁶ There is a single 60-foot articulated diesel bus purchased in 2008 that is greater than 12 years of age.

3.2.2: Related Levels of Service

Table 3.5 Related Levels of Service

Customer Value	Focus	Service Performance Measure	2022 Performance
Accessible	Technical	Ridership - Specialized	222,912
		Percentage of accessible transit Fleet	100%
Cost Efficiency	Technical	Rides per service hour - Conventional	21.6
		Rides per service hour - Specialized	1.5
		Facilities reinvestment rate	13.9%
		Fleet reinvestment rate	5.6%
Customer Satisfaction	Customer	Percentage of residents satisfied with Transit services	2022 not available given pandemic impact
Reliability	Customer	Percentage of Facilities in Fair or better condition	47.9%
		Percentage of Fleet assets in Fair or better condition	99.5%
		Percentage of Information Technology assets in Fair or better condition	81.2%
		Percentage of Other Facilities Assets in Fair or better condition	96.4%
	Technical	Mean Kilometer per service pull-in	6,909
	Technical	Mean Kilometer per in-service repairs	4,389
Scope	Technical	Rides per Capita - Conventional	31.1
	Technical	Ridership – Conventional	13,366,417
	Technical	Percentage of City population within 400m of a bus stop	88%
	Customer	Service hours per capita	1.4

3.3: Asset Lifecycle Management

3.3.1: Asset Lifecycle Management Activities

The asset lifecycle management activities are the range of actions funded through the operating and capital budgets that

are practiced on the assets. Asset lifecycle activities are generally grouped into the categories shown in Table 3.6.

Table 3.6 Definitions for Lifecycle Activities

Activities	Description
Non-Infrastructure Solutions	Actions or policies that can lower costs or extend useful lives.
Maintenance	Including regularly scheduled inspection and maintenance or more significant repairs and activities associated with unexpected events.
Renewal/Rehab	Significant repairs designed to extend the life of the asset.
Replacement/Construction	Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehab is no longer an option.
Disposal	Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the municipality.
Service Improvement	Planned activities to improve an asset's capacity, quality, and system reliability.
Growth	Planned activities required to extend services to previously unserved areas – or expand services to meet growth demands.

3.3.2: Asset Lifecycle Management Strategy

LTC employs a combination of lifecycle management activities to maintain current LOS while striving to optimize costs based on defined risks. This strategy includes activities for maintenance, rehabilitation, replacement, disposal, and regular investments in strategic plan priorities, while continuing to prepare for introducing service improvements.

When feasible, LTC also strives to further optimize these lifecycle activities by coordinating and synchronizing work across multiple assets or asset categories, which can result in cost and service efficiencies. Additionally, with significant asset investments, LTC seeks to optimize asset use and redundant capacity, often achieved through risk benefit cost analyses and cost effectiveness analyses.

This strategy is not static. Selected lifecycle activities are reviewed and modified based on continual industry benchmarking, staff training, professional networking, service reviews (including customer reviews), consultant recommendations, and trial and error through scenarios and pilot programs. LTC is also committed to climate change adaptation and mitigation planning through ZEB Pilot Program, and strategic planning exercises, which may trigger asset investment needs. The ZEB pilot program will involve 10 zero emission buses and having facilities infrastructure adapted to needs of having a ZEB-based fleet. Capital budget MU1101 will provide the funding for this pilot project. Also, as part of LTC's strategic planning exercises a more fulsome climate mitigation and infrastructure greening strategy like the City's Climate Emergency Action Plan is under consideration.

Table 3.7 lists specific asset management practices or planned actions LTC conducts for each lifecycle activity associated with

each of the transit facilities and other LTC assets such as Fleet, Information Technology, and Other Facility Assets.

Table 3.8 lists specific risks associated with asset management practices or planned actions by lifecycle activity for all asset types.

Table 3.7 Current Asset Management Practices or Planned Actions

Activity	Specific Asset Management Practices or Planned Actions
Non-Infrastructure Solutions	<p>Facility</p> <ul style="list-style-type: none"> Facilities are maintained and renewed through a specialized Facilities Team and other facilities management applications, which combined with comprehensive condition assessments and Facilities Team experience, determines the lifecycle management needs of a facility. Needs include the direct care of the building envelope, mechanical and electrical systems, etc. <p>Fleet</p> <ul style="list-style-type: none"> LTC Fleet assets are rigorously maintained to support the reliable delivery of transit service. They receive monthly and more rigorous biannual and annual inspections. Ongoing lifecycle management reviews plus condition assessments at end of life. Various tests extending lifecycle and assess impact on performance, cost, and risks are completed. <p>Information Technology</p> <ul style="list-style-type: none"> Monitor and track IT equipment age and performance to determine when assets should be replaced. Soft strategies (i.e., policies) to mitigate radio communication, data and fare equipment failure are continuously updated. Software focus is to ensure that applications are considered ‘in support’ to mitigate potential malware/cyber-attacks and ensure assets are operating efficiently for individuals and services using them. <p>All LTC Assets</p> <ul style="list-style-type: none"> Various controls and approval processes to safeguard assets. Financial planning strategies to control costs. Ongoing use and further development of computerized maintenance management system. Updating and applying design standards. Ongoing search for additional funding. Operational continuous improvements. Improvements to employee capabilities, communications, training, etc. Changes to current and proposed LOS. Developing asset management program. Leadership networks with peers through conferences and committees to learn from other’s experiences at both provincial and federal levels.

Activity	Specific Asset Management Practices or Planned Actions
Maintenance	<p>All LTC Assets</p> <ul style="list-style-type: none"> Scheduled preventative maintenance programs for most assets. Scheduled inspection programs for key assets. Maintenance also triggered by public/community partners feedback (when applicable). <p>Facility</p> <ul style="list-style-type: none"> A work order system exists for LTC Facilities Team employees to generate and document capital works requests and completions. <p>Fleet</p> <ul style="list-style-type: none"> A work order system exists for LTC Fleet Team to generate and document capital works requests and completions. Vehicles and equipment are monitored, and problems addressed when triggered by staff observations. Tender and request for proposal specifications are modified based on experience to minimize recurrence of issues, where possible. Reactive maintenance for circumstances that cannot be easily mitigated (vehicle accidents requiring immediate repair, faster than anticipated vehicle breakdown, etc.). Tracking all failures as incidents to continue to improve. Target is to minimize unplanned work and asset down time. Empowering staff to make decisions regarding elective repairs to ensure continuity of service and fewer breakdowns while in service. <p>Information Technology</p> <ul style="list-style-type: none"> Users of LTC hardware and software assets provide asset concerns on proactive basis through alerting applications and preventative maintenance programs. Concerns are also addressed through routine maintenance programs reported by the user to the IT Team.
Renewal/ Rehabilitation	<p>Facility</p> <ul style="list-style-type: none"> Facilities are regularly evaluated through comprehensive condition assessments, which determine the cost and timing of lifecycle renewal requirements. <p>Fleet</p> <ul style="list-style-type: none"> Regular preventative maintenance programs assist in determining renewals/rehabilitations required; major overhauls or reconditioning fleet assets are very costly and generally do not add enough extended life to add value apart from complete engine and transmission overhauls completed at the mid-way point of a buses useful life. Review opportunities to repurpose add on equipment, attachments and outfitting past the lifecycle of the parent asset. Equipment is generally not considered a rehabilitation option. The lifecycle activity is regular maintenance and the decision to replace the asset.

Activity	Specific Asset Management Practices or Planned Actions
	<p>Information Technology</p> <ul style="list-style-type: none"> IT assets are generally not rehabilitated. <p>Other Facility Assets</p> <p>Other LTC Assets</p> <ul style="list-style-type: none"> Adopt the latest technology that maintains the current LOS.
Replacement/ Construction	<p>All LTC Assets</p> <ul style="list-style-type: none"> Adopt the latest tested and proven technology that maintains the current LOS. <p>Facilities</p> <ul style="list-style-type: none"> Facilities are regularly evaluated through comprehensive condition assessments, which determine the cost and timing of lifecycle renewal requirements. <p>Fleet</p> <ul style="list-style-type: none"> Optimal asset lifecycle assessed to determine timing of replacement that minimizes maintenance/repair work and maximize salvage value. Notice to all shop supervisors and managers of end-of-life assets to help with service and repair decisions to mitigate non-value-added expenditures. Vehicle and equipment assets ideally are used to end of useful life. When unexpected events occurs then the asset would have to be immediately replaced. Maximize “in warranty” status of asset a consideration of replacement. <p>Information Technology</p> <ul style="list-style-type: none"> Scheduled replacement programs in place. When applications and software no longer receive support, they are replaced with new supported applications and software where the risks to operate beyond service periods are significant. Replaced when asset reaches end of useful life or unexpected event occurs with asset.
Disposal	<p>Facility and Other LTC Assets</p> <ul style="list-style-type: none"> Appropriate and proper disposal occur when assets are replaced or renewed. Dispose of assets under the applicable LTC procurement policy and aligned under the applicable regulation and environmental standards. <p>Fleet</p> <ul style="list-style-type: none"> Optimal lifecycle analysis results in salvage values consistently achieved. Fleet planning to stagger sales of similar assets at auction to ensure maximum returns and not over flooding resale market when available. Fleet labour used to prepare assets for disposal helping maximize return. <p>Information Technology</p> <ul style="list-style-type: none"> Assets are disposed of via an electronics recycler once they reach end of life. Hard drives are either wiped or physically destroyed.

Activity	Specific Asset Management Practices or Planned Actions
Service Improvement	<p>All LTC Assets</p> <ul style="list-style-type: none"> • Based on strategic service review results, implement service deliver changes that improve asset performance, cost, and risk. • Adopt the latest technology that enhances current or achieves proposed LOS. <p>Facility</p> <ul style="list-style-type: none"> • Consultation with community partners and users of facilities determines service improvement needs. <p>Fleet</p> <ul style="list-style-type: none"> • Extended warranties and enhanced service agreements negotiated when possible. • Request for proposals procurement practices to acquire higher quality assets with longer lifecycles. <p>Information Technology</p> <ul style="list-style-type: none"> • Potential service improvement projects are identified by staff using IT assets. • Strategic plans set short to long term objectives regarding technology service delivery modernization.
Growth	<p>All LTC Assets</p> <ul style="list-style-type: none"> • Continuously monitor the impacts of growth on service delivery and participate in Assessment Growth Policy process to secure appropriate levels of growth asset funding (when applicable). • Participate in discussions surrounding or related to the impacts of growth on service delivery and participate in Development Charges Background Studies and Assessment Growth Policy processes to secure appropriate levels of growth funding (subject to provincial legislation requirements and City of London policy) as well as inclusion in City approved base operating and capital budgets.

Table 3.8 Risks Associated with Asset Management Practices or Planned Actions

Activity	Specific Risks Associated with Asset Management Practices or Planned Actions
Non-Infrastructure Solutions	<ul style="list-style-type: none"> • Lack of a realization of the benefit from the activity (i.e., the life is not extended or the cost of managing an asset increases rather than decreases). • Lowers the costs of existing operations and may provide additional capacity but does not extend the service life of assets. • Need for revised plans, reports, and recommendations. • Inadequate funding. • Poor quality asset information and planning assumptions incorrect. • Regulatory requirements/standards criteria change or do not exist. • Economic fluctuations, inflation, downturns, and use reduction/increases. • Occurrence of climate change, adverse weather/unforeseen events and emergencies, resulting in funds being diverted to other assets or purposes that were not originally planned. • Service provision changes. • Extending useful life past optimum can increase the risk of critical failure of major components, reduced salvage and remarketing value, or can have significantly higher maintenance costs.
Maintenance	<ul style="list-style-type: none"> • Completing planned maintenance activities while managing the need to execute reactive maintenance activities. • Incorrectly planned maintenance activities can lead to premature asset failure. • Enough resources available to complete a series of unplanned, urgent work requests that are submitted in close succession. • Overscheduling preventative maintenance can lead to excessive maintenance and additional costs with no benefits. • Staffing resource issues.
Renewal/Rehabilitation	<ul style="list-style-type: none"> • Incorrect assumptions regarding improved expected useful life after rehabilitation.
Replacement/Construction	<ul style="list-style-type: none"> • Cost over-runs during large, complex design and construction projects. • Minimizing service and repairs at end of life increases the chance of failures.
Disposal	<ul style="list-style-type: none"> • Timing for replacements has an operational impact. Delaying or holding inventory requires storage and can adversely affect the function and value of the retiring asset. • Declining market for resale of transit assets.
Service Improvement	<ul style="list-style-type: none"> • Service improvement is either not required or incorrectly assessed.
Growth	<ul style="list-style-type: none"> • Incorrect growth assessments may result in overabundance or underabundance of assets. • Risk of insufficient or excess funding to construct/acquire or maintain new assets. • Potential insufficient knowledge of and supporting policies for new asset types.

3.3.3: Lifecycle Management Scenario Forecasts – Planned Budget, Maintain Current LOS, and Achieve Proposed LOS

General Approach

The general approach to forecasting the cost of the lifecycle activities that are required to maintain the current performance of the LOS metrics is to ensure that the proportion of assets in Fair or better condition remains relatively stable. Staff then consider the optimal blend of each lifecycle activity to achieve the lowest lifecycle cost management strategy that balances costs with the forecasted change in the condition profile of each asset type. Using this methodology, three different lifecycle management scenarios and their associated funding requirements are presented. For each scenario growth activities and funding requirements are constrained to those identified in the 2021 Development Charges Background Study Update. Thus, no growth infrastructure gaps are presented.

Each scenario lists the operating, renewal (inclusive of replacement, rehabilitation, and disposal), service improvement, and growth funding requirements.

These scenarios are defined as:

1. Planned Funding Scenario – Presents the budget constrained to 2023 annual budget update.
2. Maintain Current LOS Scenario – Forecasts the level of investment required to maintain current LOS performance.
3. Achieve Proposed LOS Scenario – Forecasts the level of investment required to achieve proposed LOS. The approach considers the desired LOS documented in LTC's strategic plans or other governing documents.

The Forecasted Infrastructure Gaps and Financing Strategy section provides an overview of the results along with the short- and long-term financing strategies that will be used to manage

the gap. Each scenario is further explained in the following sections.

A. Scenario One: Planned Funding

The LTC average annual activity and planned funding is summarized in Table 3.9. This scenario presents the budget constrained to the current level of planned expenditures. If there is insufficient budget in any particular year to complete a rehabilitation or replacement activity on an asset that has reached its condition or expected useful life age trigger, then the asset remains in a Poor or Very Poor condition state until there is sufficient budget in a future year to complete the lifecycle activity.

As shown in Figure 3.5, given the cost pressures associated with Rolling Stock replacement values a decreasing condition profile is projected with assets being in Fair and Poor condition (Rolling Stock assets only).

Average annual activity for operating and capital budgets are presented as the average expenditure budget from the 2021 and 2022 fiscal years. Planned funding operating budget is equal to the 2023 fiscal year budget. Planned funding capital budgets (e.g., renewal, service improvement, and growth) are the annual average of the approved 10-year capital plan for 2023-2032 per the 2023 annual budget update.

These capital budgets are inclusive of Council approved funding for:

- Highbury Facility Demolition and Upgrades ('MU1450') for which the associated lifecycle needs are presented in scenario two costs to maintain current LOS; and
- ZERO-EMISSION BUS (ZEB) Pilot Project ('MU1101') for which the associated lifecycle needs are presented in scenario three costs to achieve proposed LOS.

Growth activities are analyzed using the 2021 Development Charges Background Study Update. There is one growth project which relates to conventional transit growth needs.

Table 3.9 Scenario One – Average Annual Planned Budget (\$Thousands)

Activity Type	Average Annual Activity for 2021 and 2022	Planned Funding Relating to Maintain Current LOS	Incremental Planned Funding Relating to Achieve Proposed LOS	Total Planned Funding
Operating	42,857	45,837	None Identified	45,837
Renewal, Replacement, Rehabilitation, Disposal	10,750	44,283	None Identified	44,283
Service Improvement	7,725	1,513	2,622	4,135
Growth	4,065	1,382	None Identified	1,382

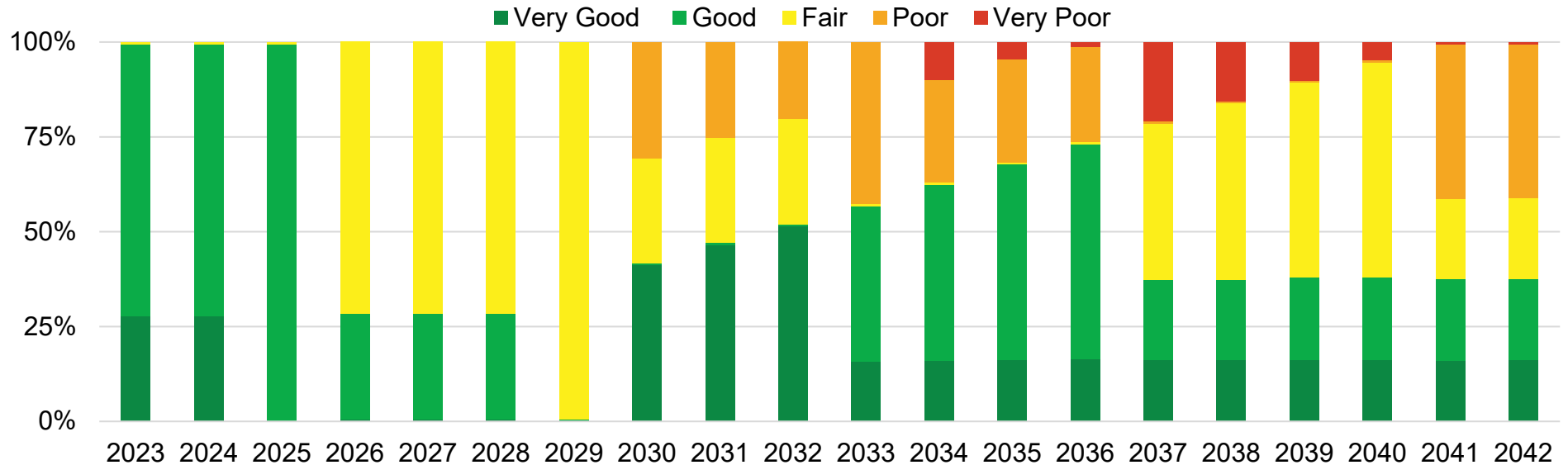


Figure 3.5 Current Budget Project Condition Profile (Rolling Stock Assets Only)

B. Scenario Two: Maintain Current LOS

The cost to maintain current LOS are summarized in Table 3.10.

This approach forecasts the lifecycle activities that are required to maintain the current performance of the LOS metrics. The analysis considers the current age and condition of assets along with the expected useful life age triggers for rehabilitation and replacement activities to forecast the funding requirements into the future. Based on this analysis, Table 3.10 identifies a 10-year infrastructure gap of \$80.0 million if LTC is to maintain current LOS.

Rolling Stock lifecycle renewal and replacement requirements represent \$57.1 million or 71% of the identified infrastructure gap. This pressure is primarily attributable to the impacts of inflation on the range of Rolling Stock used to deliver transit services, noting inflationary pressures are above historical averages due to supply and demand imbalances because of the pandemic. Based on this enhanced level of funding Figure 3.6 shows the Rolling Stock forecasted condition profile expected from the maintain current LOS, which indicates assets will be primarily in Very Good and Fair condition.

The second major contributor to the maintain current LOS infrastructure gap are lifecycle renewal and replacement requirements associated with the Information Technology assets under management. This gap represents \$16.2 million or 20% of the total maintain current LOS gap identified. The drivers of the gap are associated with radio/communications equipment, fare equipment, and computer hardware

replacement needs beyond existing capital budgets and uncommitted reserve fund balances.

Within the maintain current LOS needs analysis are the funding requirements present in the 2024-2027 MYB Business Case #P-60 – London Transit Commission – Project 2 Highbury Facility Rebuild, which is inclusive of the previously approved budget for Highbury Avenue Facility Demolition and Rebuild – Project 1. The purpose of the case is to illustrate LTC cannot operate as an entity without a proper site and facilities that reflect modern City size that LTC services. Project 1 and Project 2 need to be completed to realize the increased bus storage and charging capacity for electric buses, normal operations can continue once Project 1 is completed. Regardless of the type of vehicle LTC operates in the future, the construction of a new LTC facility at its current location on Highbury Avenue is required.

It is forecasted to cost \$332.5 million to complete the Highbury facility including demolition of existing facility, design, consulting, and cost escalations. Project 1 has been submitted to the Investing in Canada Infrastructure Program Public Transit Stream (ICIP-PTS) using the remaining \$119.3 million allocated to London, noting the funding has not yet been finalized but for AMP purposes it is assumed the funding will be secured. For Project 2, there are no known provincial or federal funding programs available at time of writing; consistent with the 2024-2027 MYB, the underlying assumption for this AMP is the City will fund it entirely in 2029. Like Project 1 it is assumed for AMP purposes the funding will be secured as such no infrastructure gap associated with Project 2 is presented.

Table 3.10 Scenario Two - Average Annual Cost to Maintain Current LOS (\$Thousands)

Activity Type	Planned Funding ⁷	Additional Reserve Fund Drawdown	Cost to Maintain Current LOS ⁸	Maintain Current LOS Infrastructure Gap
Operating Budget	45,837	None identified	45,837	None identified
Renewal, Replacement, Rehabilitation, Disposal	44,283	1,805	55,606	8,005
Service Improvement	1,513 ⁽⁹⁾			
Growth Activities	1,382	None identified	1,382	None identified

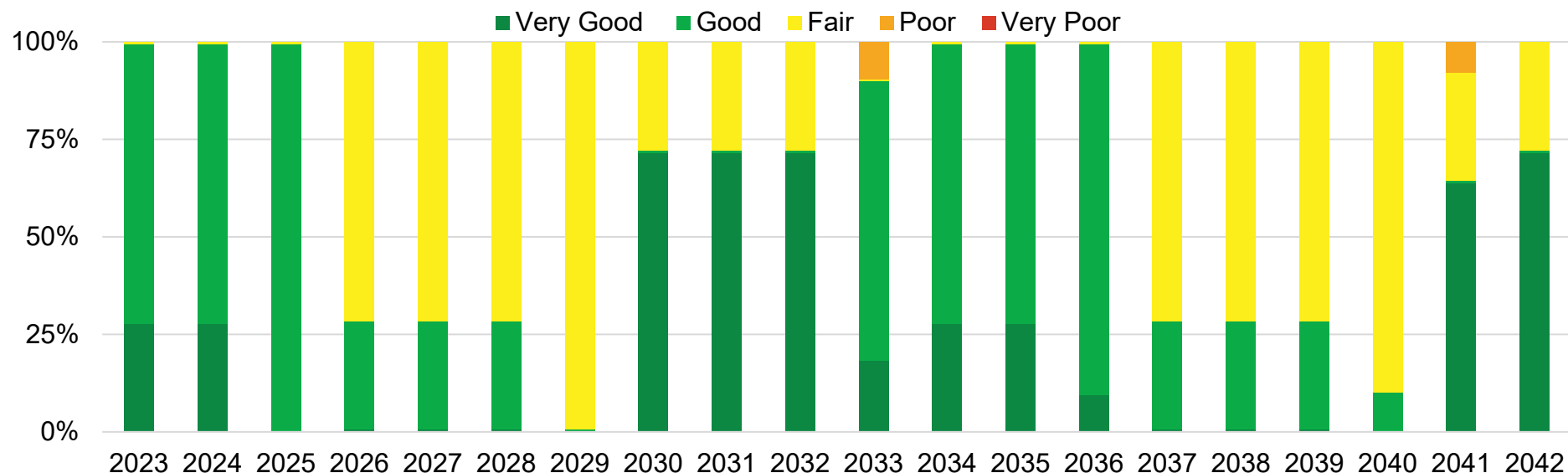


Figure 3.6 Maintain Current Levels of Service Project Condition Profile (Rolling Stock Assets Only)

C. Scenario Three: Achieve Proposed LOS

The cost to achieve proposed LOS are summarized in Table 3.11. This scenario forecasts the enhanced lifecycle and service improvement activities that are required to achieve the proposed LOS. As it relates to Rolling Stock, Figure 3.7 shows the condition profiles from this analysis are identical to maintain current LOS profiles. This is consistent with the strategy to

pursue ZEB Pilot Program for reasons other than enhancing condition.

As at time of AMP development, there is no funding mechanism and Council approved strategic direction in place to finance a full ZEB strategy implementation. In conjunction with costing estimates being only in preliminary stages, the only achieved proposed LOS needs relates to the electric bus trial program

⁷Planned funding relates to maintain current LOS.

⁸Investment to maintain current LOS based on 2024-2027 MYB business cases 60 and committed funding to date for Highbury Facility.

⁹ It is noted that service improvement budget 'MU1101 Zero-Emission Bus' is excluded as this funding is used solely for achieve proposed LOS in table 3.11.

(projected to start calendar year 2025) of 10 ZEBs and accompanying supporting infrastructure is financed through service improvement budget MU1101, which was approved in the 2020-2023 MYB period.

Table 3.11 forecasts a 10-year infrastructure gap of approximately of nil given the ZEB Pilot Program is fully funded from 2020-2023 MYB period approved budgets.

Table 3.11 Scenario Three - Average Annual Cost to Achieve Proposed LOS (\$Thousands)

Activity Type	Planned Funding ¹⁰	Additional Reserve Fund Drawdown	Cost to Maintain Current LOS	Incremental Cost to Achieve Proposed LOS (CEAP/ZEB Implementation)	Achieve Proposed LOS Infrastructure Gap ¹¹
Operating Budget	45,837	None identified	45,837	None identified	None identified
Renewal, Replacement, Rehabilitation, Disposal	44,283	1,805	55,606	2,622	None Identified
Service Improvement	4,135				
Growth Activities	1,382	None identified	1,382	None identified	None identified

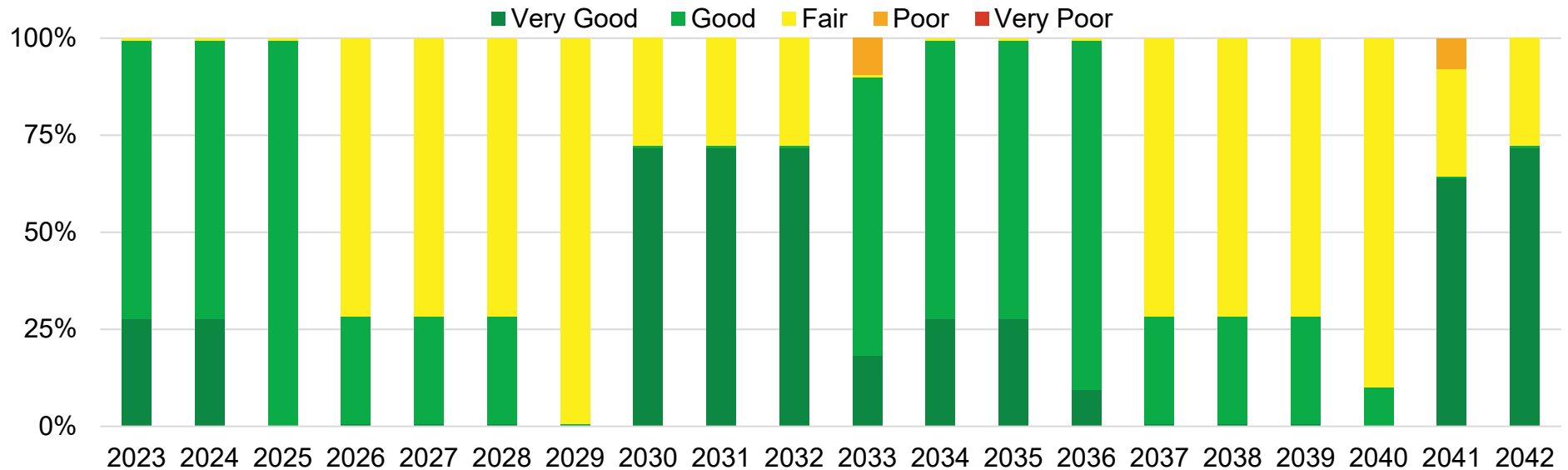


Figure 3.7 Achieve Proposed Levels of Service Projected Condition Profile (Rolling Stock Assets Only)

¹⁰Planned funding to achieve proposed LOS is cumulative of planned funding of maintain current LOS.

¹¹Infrastructure gap to achieve proposed LOS is inclusive of maintain current LOS infrastructure gap and incremental investment to achieve proposed LOS.

3.4: Forecasted Infrastructure Gaps and Financing Strategy

3.4.1: Forecasted Infrastructure Gaps

The infrastructure gaps are a dollar amount based on the difference between:

- the amount of money that needs to be spent on LTC assets required to provide services, and
- the amount of funding presently identified in budgets and reserve funds over a 10-year period (2023-2032).

In other words, what LTC plans to spend versus what the assets need. Ideally, the infrastructure gaps decline over time as greater investments are made to replace older infrastructure, to improve the condition of infrastructure and to minimize the risks associated with failing assets and insufficient asset complements.

The LTC identified infrastructure gaps are summarized below in Table 3.12 and illustrated in Figure 3.8. Over the 10-year analysis period, the cumulative maintain current LOS and achieve proposed LOS infrastructure gaps are expected to be \$80.0 million and nil, respectively.

The gap to maintain current LOS is 15.7% of LTC's \$510.3 million infrastructure replacement value. Maintain current LOS pressures of note include maintaining investment for Rolling Stock with supplementary funding gaps for IT Equipment and Other Facilities Assets to ensure LTC can continue providing reliable public transit in the London geographic area. Planned capital reserve fund drawdowns that finance IT Equipment and Other Facilities Assets are a component of the listed reserve fund availability.

The incremental gap to achieve proposed LOS is nil of LTC's infrastructure replacement value.

Table 3.12 Average Annual Budget and Gap Analysis (\$Thousands)

Asset Type	Planned Funding to Maintain Current LOS	Incremental Funding to Achieve Proposed LOS	Reserve Fund Availability	Investment to Maintain Current LOS	Incremental Investment to Achieve ZEB	Infrastructure Gap to Maintain Current LOS	Infrastructure Gap to Achieve Proposed LOS
Land, Facilities	35,014	1,230	None Identified	35,014	1,230	None Identified	None Identified
Fleet	10,782	1,121	809	17,623	1,121	6,032	None Identified
IT Equipment	None Identified	53	922	2,543	53	1,621	None Identified
Other Facility Assets	None Identified	218	74	426	218	352	None Identified
London Transit Commission	45,796	2,622	1,805	55,606	2,622	8,005	None Identified

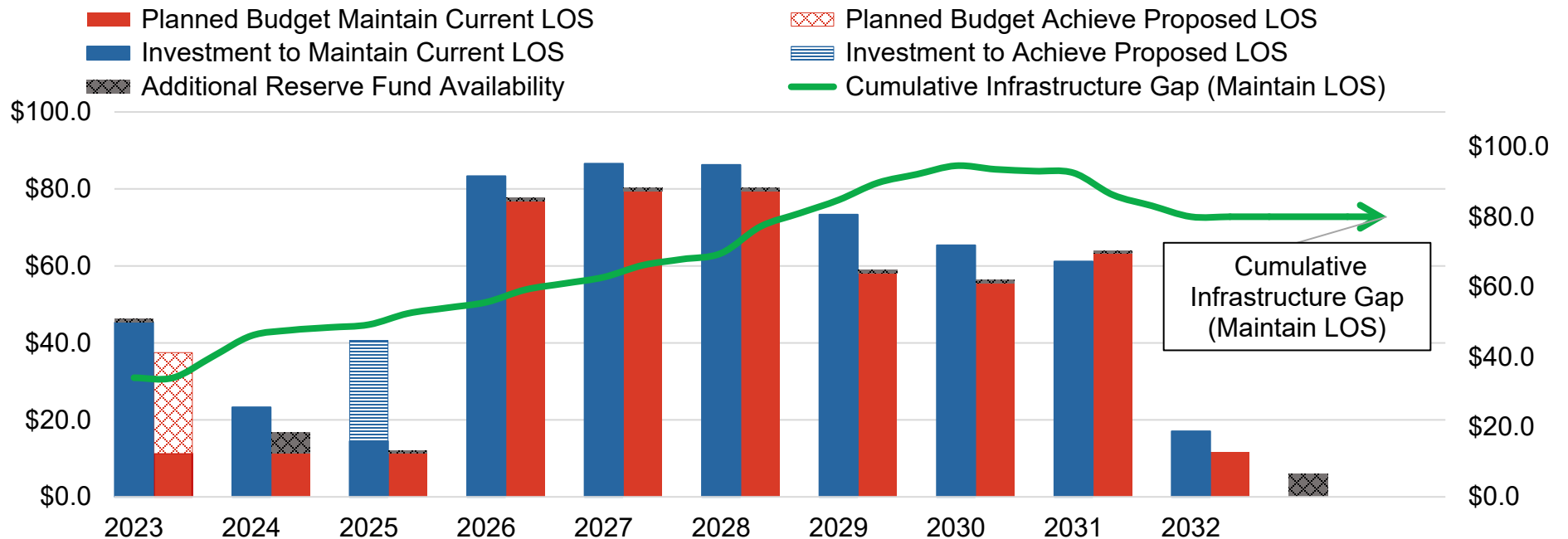


Figure 3.8 Maintain Current and Achieve Proposed LOS Cumulative Infrastructure Gap (Millions)

3.4.2: Infrastructure Gap Financing Strategy

At present, Canada lacks a defined standard or guidance for assessing the acceptability of municipal infrastructure gaps. Nevertheless, the fundamental objective of asset management is that LTC actions are collectively (both financial and non-financial) anticipated to tackle the growth in projected infrastructure gaps.

Typically, the infrastructure gap financing strategies supports this objective by setting out the approach to ensuring that appropriate funds are available to support the delivery of infrastructure dependent services. This is done by completing the AMP well in advance of the multi-year budgeting process so that its results help inform the requested operating and capital budgets. However, due to lagging impacts of the pandemic, the AMPs for all the City's agencies, boards, and commissions were delayed post 2024-2027 MYB development. As such this infrastructure gap financing strategy does not present alternative financing options. In lieu of alternative financing strategies, in 2025 this AMP will be updated and reported to Commission and Council based on the approved 2024-2027 MYB and 2025 annual budget update.

3.5: Discussion

3.5.1: Lifecycle Management Scenarios

The lifecycle management section included three scenarios – planned budget, maintain current LOS, and achieve proposed LOS.

Scenario One planned budget is identified to have constraints on LTC's capacity to effectively maintain infrastructure. This leads to an expectation of asset condition deterioration. This decline might not be immediate but, over time, it becomes more visible to the public and causing operating problems, increasing the operating and maintenance costs, and potentially leading to higher repair or replacement costs in the future.

Scenario Two maintain current LOS funding is greater than what is currently allocated, illustrating the financial strain of maintaining a healthy asset portfolio and LTC services. This scenario acknowledges the need for continual investment in assets to maintain their current state.

Scenario Three achieve proposed LOS represents improvements aligning with ZEB Pilot implementation needs. This level of funding is greater than both the planned budget and the one needed to maintain current LOS. The advantages of this approach are alignment with City of London's CEAP.

These three scenarios result in different LOS depending on the funding provided for asset lifecycle renewal and service improvement actions. Thus, the choices made will have an implication for asset condition and LTC operational effectiveness.

3.5.2: Current and Future Challenges

General

LTC faces a dynamic collection of opportunities and challenges that impact service delivery and infrastructure. For example, some of these conditions and trends include:

- Economic (e.g., budget pressures/inflation, post pandemic industry recovery)
- Organizational (e.g., recruitment and retention of staff, particularly drivers and mechanics, continued quest/community engagement and partnerships)
- Technology (e.g. ever changing systems and technologies supporting riders in the transit industry)
- Political/Legal (e.g., multi-tier governmental and business partnerships such as ICIP-PTS)
- Environmental (e.g., sustainability, climate change, Zero Emission Bus Implementation Strategy)

To help navigate these factors the LTC 2019-2023 Business Plan provides a framework for the development of proactive, leading-edge strategies designed to ensure the changing needs of our riders are supported through meaningful engagement and collaboration, investment in our people and infrastructure, and effective and efficient service delivery.

The following commentary summarizes the main current and future challenges impacting infrastructure needs and costs.

Pandemic Disruption, Inflation, Employee Resourcing

Pandemic disruption greatly impacted LTC ridership¹². LTC's strategy was to continue providing essential transit services to conventional transit routes, however, it was initially impacted by

employee resource challenges like witnessed in many other industries.

Administrative services within LTC generally are modestly staffed, so any unexpected absences can impact LTC. As LTC emerges from the pandemic, inflationary pressures beyond those accounted for within the 2020-2023 MYB and associated 10-year capital plans started developing in 2021 and continued throughout 2022 and into 2023 due to COVID-19 induced supply chain disruptions and supply-demand imbalances. As of 2023, these higher input costs have been incorporated into the 2024 LTC AMP and are a material component of the infrastructure replacement values and 10-year infrastructure gaps reported. These capital financing pressures represent a significant risk to the condition and LOS associated with LTC infrastructure assets.

Additionally, although supply chain issues have begun to normalize post-pandemic, one significant area of risk remains with the supply and delivery of buses. Currently there is only one bus manufacturer supplying clean diesel buses in Canada with delivery lead times now approaching 16 months.

Political and Legal¹³

Infrastructure Canada's Investing in Canadian Infrastructure Program (ICIP) is a \$33 billion program to deliver funding bilaterally between IC and provinces and territories.

The Government is investing in the construction, expansion, and improvement of public transit infrastructure, for projects that:

- Improve the capacity of public transit infrastructure;

¹²<https://www.londontransit.ca/staff-report-1-covid-19-ridership-and-service-impacts/> to <https://www.londontransit.ca/staff-report-8-covid-19-ridership-and-service-impacts/>

¹³ <https://www.infrastructure.gc.ca/plan/icp-pic-INFC-eng.html>

- Improve the quality or safety of existing or future transit systems; and
- Improve access to a public transit system.

The public transit stream (PTS) of ICIP indicates a 40% federal, 33% provincial, and 27% municipal cost sharing formula. In late 2022 budget requests were submitted to finance Project 1 Highbury demolition and rebuild¹⁴. Funding through this stream is allocated according to a formula based on ridership and population, which balances the demand on existing systems, while providing support for expected population growth. However, at the time of writing the AMP, funding approval of Project 1 and funding programs for Project 2 are still outstanding.

Technology

Monitoring and enhancing technology to ensure best in class onsite connection and Fleet communication and tracking is a continuous pressure.

Climate Change

In 2019, London City Council declared a climate emergency. LTC has also begun a Zero Emission Bus Implementation Strategy¹⁵. As a frame of reference there are currently 8 hybrid buses within LTC's Rolling Stock inventory along with the pilot to introduce 10 zero emission buses into the fleet. Future AMP analysis could include facilities energy efficiency and GHG reduction investments (i.e., green for like lifecycle renewal and green service improvement costs) and analyzing energy reduction measures identified in the 2023-2027 Strategic Plan.

The Zero Emission Strategy also highlights the need for multilevel government support, including the federal Zero

Emission Transit Fund which includes support purchasing of zero-emission buses and supporting charging infrastructure and facility upgrades; Strategic Science Fund to leverage onsite research opportunities with partnered science and research organizations, Clean Fuels Fund which could support pilot programs allied to hydrogen fueling technologies, and Canada Infrastructure Bank Financing (Zero-Emission Buses Initiative) which helps finance the cost differential for electric bus technologies over diesel buses.

If the ZEB implementation strategy is pursued, the transition to ZEBs will significantly alter LTC service and operations at all levels. A change of this magnitude will require extensive change management and training as well as increased resources. Training processes are predicted to be an ongoing process even after the initial rollout of ZEBs given battery technology is continually evolving.

Aging Infrastructure

Like most Canadian municipalities, City of London and LTC owns and maintains aging infrastructure. In the case of LTC, this is most materially representative in the headquarters facility which is approximately 74-years old, as it was constructed in the 1950's and then converted for LTC use in 1972. Facilities this age often may require substantial capital investments to maintain their condition and operational functionality. This is illustrated in the 2024-2027 MYB Business Case #P-60 for Project 2 Highbury Facility Rebuild. As a general comment, LTC needs to continuously assess the latest Fleet and Facilities requirements to assess if modern service delivery needs are being met.

¹⁴ <https://pub-london.escribemeetings.com/filestream.ashx?DocumentId=95828>

¹⁵ <https://www.londontransit.ca/staff-report-1-zero-emission-bus-implementation-strategy/>

Growth

London is experiencing steady to above average population and employment growth. From a City-wide perspective this growth triggers a surge of City-wide service and asset capacity needs, resulting in a proportional boom in new and/or enhanced infrastructure construction and acquisition.

As the asset portfolio increases due to growth, ongoing renewal of these new assets require more resources. To accommodate the tax-supported financing pressures Council approved the Assessment Growth Policy to ensure new property tax dollars attributable to growth are used to fund the long-term operating and capital financing needs of applicable City services and assets.

This AMP does assume LTC will inherit operations of Bus Rapid Transit once infrastructure is constructed. However, as noted in the Assumptions and Limitations section of the AMP, it is not yet confirmed this will occur. It is also noted the implementation of Bus Rapid Transit, once the infrastructure is constructed, will further support growth of transit in the City of London.

Additionally, this growth may correspond to increased demand on existing assets, such as increasing 'wear and tear' due to volume. As a result, maintaining existing infrastructure capacity and quality, especially with climate change impacts as well, poses continuous challenges as intensification occurs and as additional urban and rural development continues.

3.6: Conclusion

Table 3.13 presents the summary of the State of Local Infrastructure, Infrastructure Gap, and Reinvestment Rates for LTC assets.

Valued at over \$510.3 million, the LTC assets are overall in Good condition, indicating that historically there has been sufficient investment in sustaining these assets to maintain the current LOS. However, to maintain current LOS and achieve proposed LOS additional investments are required, with preliminary calculations at approximately \$80.0 million over 10-years (2023-2032). It is also noted that if supply chain issues and rising costs continue, the timely rehabilitation, replacement, and acquisition of LTC assets will be in jeopardy and could result in degradation of the services ultimately delivered.

Table 3.13 Summary of the State of Local Infrastructure, Infrastructure Gap, and Reinvestment Rates (Millions)

Asset Type	Replacement Value	Current Condition	Infrastructure Gap Maintain Current LOS ¹⁶	Infrastructure Gap Achieve Proposed LOS	Current Annual Reinvestment Rate	Recommended Annual Reinvestment Rate ¹⁷
Land	\$5.4	Not applicable	None Identified	None Identified	Not applicable	Not applicable
Facilities	\$261.6	Fair			13.9%	13.4% to 13.9%
Fleet	\$213.4	Good	\$60.3	None Identified	5.6%	8.3% to 8.8%
IT Equipment	\$24.8	Fair	\$16.2	None Identified	0.2%	10.3% to 10.5%
Other Facility Assets	\$5.1	Good	\$3.5	None Identified	4.3%	8.4% to 12.7%
London Transit Commission	\$510.3	Good	\$80.0	None Identified	9.5%	10.9% to 11.4%

Reliability and Accuracy Commentary

Figure 3.9 visually presents LTC and CAM staff assessment of AMP data reliability and accuracy. Data reliability is moderately high and accuracy is rated moderate.



Figure 3.9 Accuracy Reliability Scale

There are a variety of strategies, business plans, public documents, and funding applications indicate a greater data reliability.

Facility valuation and needs is based on internal expert opinion and supplementary work relating to Highbury expansion and corroborated with Altus standard costing. However, full implementation of VFA Facilities Management software (or similar facilities software) is being considered in context of staff and financial resources.

Remaining inventories are an amalgamation of data sources. Majority of valuation, condition, and investment actuals and forecasts are primarily based on expert opinion. Further processes, systems, and controls are required to improve these data sets.

A review of systems and processes that support LTC asset registries is recommended over the 2024-2027 MYB and beyond. Such investments will raise the reliability and accuracy of the data. The long-term goal is to have all asset registries within advanced asset management software applications.

¹⁶ This projected infrastructure gap is reduced by the forecasted reserve fund drawdown availability over the next decade.

¹⁷ Source: Reinvestment rates based on maintain current LOS and achieve proposed LOS.



Section 4. Conclusion and Recommendations

4.1: Conclusions

4.1.1: Key Findings

LTC infrastructure systems are integral to transit services and play a key role in achieving LTC 2019-2023 Business Plan, Zero-Emission Bus Implementation Strategy, and the City's 2023-2027 Strategic Plan objectives and goals.

This AMP is a strategic document that describes the state of LTC's infrastructure and the approach to managing assets over their lifecycle to maintain current LOS and achieve approved LOS at the lowest lifecycle cost possible. It was produced through extensive efforts of LTC and City CAM staff leveraging the City's CAM Policy and Program as well as knowledge gained from the City's 2014, 2019, 2023 CAM Plans. Over time, each successive AMP will play a larger role in informing infrastructure and service decision-making.

The key findings of the AMP are:

- There is \$510.3 million worth of infrastructure under the direct ownership and control of LTC. This infrastructure represents a diverse array of assets including Facilities, Fleet, Information Technology assets, and Other Facilities Assets.
- The overall condition of LTC assets is rated as Good.
- Good condition indicates that the infrastructure shows general signs of deterioration and requires attention, some elements exhibit significant deficiencies. There are also facility requirements that go beyond condition assessments to appropriate space for modern LTC operations, which include electrification efforts that lead to purchasing Zero Emission Buses and having support infrastructure, such as charging stations, in place.
- Based on the existing LTC planned funding, the 10-year maintain current LOS infrastructure gap is approximately

\$80.0 million and the 10-year achieve proposed LOS infrastructure gap is approximately nil.

- Through the 2024-2027 MYB a significant portion of this gap has been approved for funding by the Commission but it is noted this AMP does not reflect budgets updated through the 2024-2027 MYB process. Any finalized Council decisions will be reflected in future AMPs or annual plan updates.
- Future AMPs will be brought forward to align with the development of MYBs and will present financing strategies to mitigate remaining infrastructure gaps annual growth while balancing the impact of taxation affordability on the community.

4.1.2: Ontario Regulations 588/17 Compliance

O. Reg 588/17 has a phased approach with two timelines of July 1, 2024, and July 1, 2025, that are applicable to the City's agencies, boards, and commissions (ABCs). The July 1, 2024 timeline is where all City infrastructure assets, including those of ABCs, will have an AMP documenting maintain current LOS and financial strategies to fund these expenditures. The final deadline of July 1, 2025, builds on the July 1, 2024 deadline with the additional requirement to document achieve proposed LOS and financial strategies to fund these expenditures for all types of municipal infrastructure assets.

This AMP is compliant with the July 1, 2024, and July 1, 2025 O.Reg. 588/17 requirements. A detailed reconciliation of this AMP's compliance with the O. Reg. 588/17 requirements is contained in Appendix A. O.Reg.588/17 Asset Management Plan Requirements.

4.2: Recommendations

The City's CAM Program is founded on the principle of continuous improvement with the object of increasing line-of-sight quality of data/information and the tools and techniques that are used to inform services and asset management decision-making. This increased quality will lead to greater confidence in the analysis documented and decisions formed through the AMP.

Based on these objectives, Table 4.1 recommendations will ensure that this process and AMP continues to help LTC manage its \$510.3 million asset portfolio to provide affordable and sustainable service delivery and keep compliant with the

Table 4.1 2024 LTC AMP Recommendations

Category	Improvement Initiative details	Key Benefits	Time Period
Asset Inventory/ Knowledge	Enhance data attributes and data accuracy of existing asset registries (asset inventory databases).	<ul style="list-style-type: none"> • Supplement the basis for decision making on the asset base and enables more efficient reporting. 	Short Term
	By asset type, enhance methodologies for determining asset conditions.	<ul style="list-style-type: none"> • Increases consistency of asset management practices across LTC assets and improves decision-making. 	Long Term
Level of Service	Develop more asset related LOS metrics and their performance targets.	<ul style="list-style-type: none"> • Enhance aligning operational performance with customer expectations and strategic objectives. • Lifecycle cost saving, better focused investment planning and more informed decision-making. 	Long Term
Lifecycle Management and Decision Making	Supplement investment strategies for LTC infrastructure based on asset registries and strategic plans.	<ul style="list-style-type: none"> • Furthers understanding of the investment priorities for each asset type and investment period. 	Short Term
	Incorporate and align the AMP into LTC strategic planning exercises to better reflect asset and service delivery capability.	<ul style="list-style-type: none"> • Strategic plans developed on a sound basis reflecting the actual capability of the asset base and required capital investments to achieve desired LOS. 	Long Term

regulatory requirements. These recommendations are structured to address short- and long-term objectives and are categorized according to distinct asset management knowledge areas, considering the current state, future needs, and overall LTC strategic objectives and goals. Short term objectives are those that are recommended for completion over the 2024-2027 MYB period. Long term objectives are those that are recommended for completion beyond the 2024-2027 MYB period. Each of these recommendations will be completed with leading support from the City's CAM staff per the approved asset management service level agreement, and within existing staff, other resources, and budgets.

Category	Improvement Initiative details	Key Benefits	Time Period
	Develop and implement a Maintenance Management Strategy incorporating enhanced maintenance practices.	<ul style="list-style-type: none"> • Lifecycle cost savings, and productivity and LOS improvements. 	Long Term
Risk Management	Enhance LTC asset risk framework in line with the City's CAM Risk Management Strategy.	<ul style="list-style-type: none"> • Better targeted asset interventions. • Increased ability to sustain service levels. 	Long Term
Financial Management	Explore opportunities to address the infrastructure gap through various financing strategies.	<ul style="list-style-type: none"> • Enhanced investment strategies. • Enhance service and financial sustainability. 	Long Term
Systems and Technology	Leveraging either City or LTC software solutions, implement centralized asset registry technology.	<ul style="list-style-type: none"> • Implementation will streamline asset management, enhancing operational efficiency, decision-making accuracy, and compliance. 	Long Term
People and Staff	Enhance asset management governance within each LTC service area.	<ul style="list-style-type: none"> • Enhances oversight of asset interventions and reporting. 	Long Term
	Add asset management duties in relevant positions job description.	<ul style="list-style-type: none"> • Proactive identification of staff, skills, and qualifications. • Improved asset management. 	Long Term
Monitoring and Reporting	Develop a comprehensive AMP every 4-years aligned with the City's multi-year budget process.	<ul style="list-style-type: none"> • Informed budget decision-making. • Regulatory compliance. 	Short Term
	Monitor and report annually the progress of this AMP. The annual progress review will address implementation of the recommendations and any factors impeding completion progress.	<ul style="list-style-type: none"> • Regulatory compliance. 	Short Term
	With the support of City CAM staff, when possible incorporate infrastructure related data and public feedback opportunities in existing LTC public engagement practices.	<ul style="list-style-type: none"> • Enhanced adaptability to changing operational environments and community partners needs. • Improved customer satisfaction and engagement. • Increased efficiency and effectiveness in asset management operations. 	Short Term



Appendix A. O.Reg.588/17 Asset Management Plan Requirements

A1. O.Reg.588/17 Asset Management Plan Compliance Reconciliation

Table A1.0.1 O.Reg.588/17 July 1, 2024 Requirements

O.Reg.588/17 Section	Requirement	Mapping to AMP
0	Summary of assets in each category	Sections - #3.1.1
5.(2) 3.	Replacement cost of assets in each category	Sections - #3.1.1
5.(2) 3.	Average age of assets in each category	Sections - #3.1.2
5.(2) 3.	Condition of assets in each category	Sections - #3.1.3
5.(2) 3.	Description of municipality's approach to assessing condition of assets in each category	Sections - #3.1.3
5.(2) 1.	Current levels of service	Sections - #3.2.1 and #3.2.2
5.(2) 2.	Current performance measures of assets in each category based on established metrics	Sections - #3.2.1 and #3.2.2
5.(2) 4.	Lifecycle activities needed to maintain current levels of service for 10 years	Sections - #3.3.2
5.(2) 4.	Costs of providing lifecycle activities needed to maintain current LOS, based on assessment of lifecycle, options, risks, lower cost	Sections - #3.3.3
5.(2) 4.	Link or description of assessment of current LOS lifecycle, options, risks, lower cost	Sections - #3.3.2
5.(2) 5.	For population <25K, description of population or economic forecast assumptions, and how these connect to lifecycle cost projections for current LOS	Not Applicable
5.(2) 6.i.	For population 25K or more, population and employment forecasts	Not Applicable
5.(2) 6.ii.	For population 25K or more, lower tier in Greater Golden Horseshoe (GGH), Sched 7 or portion of upper tier growth plan forecast, or assumptions	Not Applicable
5.(2) 6.iii.	For population 25K or more, upper/single tier outside GGH, population and employment forecasts, or assumptions	See City of London 2023 CAM Plan ¹⁸
5.(2) 6.iv.	For population 25K or more, lower tier outside GGH, portion of upper tier growth plan forecast	Not Applicable
5.(2) 6.vi.	For population 25K or more, capital and significant operating costs for each of 10 years, to maintain LOS to accommodate increase in demand cause by growth	Sections - #3.3.3
7.(1)	Date of review and update of AMP - within 5 years	Include once finalized
8.	Endorsement of AMP by executive lead	Include once finalized
8.	Approval of AMP by municipal Council resolution	Include once finalized
9.(1)	Date of municipal Council review of AM progress - before July 1 every year	Include once finalized
9.(2)	Annual municipal Council review includes progress, factors impeding implementation, strategy to address factors	Include once finalized
10	Website availability of policy and AMP, copy provided if requested	Include once finalized

¹⁸ <https://london.ca/sites/default/files/2023-10/Corporate%20Asset%20Management%20Plan%202023.pdf>

Table A1.0.2 O.Reg.588/17 July 1, 2025 Requirements

O.Reg.588/17 Section	Requirement	Mapping to AMP
6.(1) 1.	Proposed levels of service for each of 10 years	Sections - #3.2.1
6.(1) 2.	Explanation of why proposed LOS are appropriate, based on options, delta, achievability, affordability	Sections - #3.3
6.(1) 2.	Link or description of assessment of proposed LOS options, delta, achievability, affordability	Sections - #3.3
6.(1) 3.	Proposed performance measures of assets based on metrics established by the municipality (e.g. measures for energy usage, operating efficiency, etc.)	Sections - #3.2
6.(1) 4.	Lifecycle management strategy: Identification of lifecycle activities needed to provide proposed levels of service for a 10-year period, based on assessment of full lifecycle, options, risks, lowest cost	Sections - #3.3.3
6.(1) 4. i.	Link or description of assessment of proposed LOS lifecycle, options, risks, lower cost	Sections - #3.3.3
6.(1) 4. ii.	An estimate of annual costs for undertaking identified lifecycle activities over a 10-year period.	Sections - #3.3.3
6.(1) 4. iii.	Projections for annual funding to be available to undertake identified lifecycle activities over a 10-year period	Sections - #3.3.3
6.(1) 4. iii.	Explanation of the options examined to maximize the funding projected to be available	Sections - #3.3.3 and #3.4.1
6.(1) 4. iv.	Identification of funding shortfalls for lifecycle activities over a 10-year period	Sections - #3.4.1
6.(1) 4. iv.	Identification of lifecycle activities that will be undertaken if there is a shortfall	Sections - #3.3.3
6.(1) 4. iv.	Explanation of how risks associated with not undertaking any of the lifecycle activities will be managed.	Sections - #3.3.3
6.(1) 5.	For population <25K, description of population or economic forecast assumptions, and how these connect to lifecycle cost projections for proposed LOS	Not Applicable
6.(1) 6.	For population 25K or more, capital and significant operating costs for each of 10 years, to achieve proposed LOS to accommodate increase in demand caused by growth	Sections - #3.3.3
6.(1) 6. ii.	For population 25K or more, funding projected to be available, by source, due to growth	Sections - #3.3.3
6.(1) 6. iii.	For population 25K or more, overview of the risks associated with implementation of the AMP	Sections - #3.5
6.(1) 7.	Explanation of other key assumptions	Sections - #2.4

Glossary

Definitions

Achieve Proposed Levels of Service: is defined as the strategic initiatives undertaken by an organization to modify its service levels represented in a new proposed standard of service provision. This could involve modifying the condition, scope, or accessibility of the services beyond their current levels, based on strategic goals (e.g., Regulation Requirements, Master Plans or Strategic Plan Targets). The achievement of these proposed service levels may require changes in frequency and/or scope of asset lifecycle activities.

Asset: Non-financial assets having physical substance that are acquired, constructed, or developed and:

- are held for use in the production or supply of goods and services for rental to others, for administrative purposes or for the development, construction, maintenance or repair of other tangible assets;
- have useful economic lives extending beyond an accounting period of one year;
- are to be used on a continuing basis; and
- are not for resale in the ordinary course of operations.

For the LTC, capital assets have the following characteristics:

- Beneficial ownership and control clearly rests with LTC, and
- The asset is utilized to achieve LTC plans, objectives, and services with the intention of being used on a continuous basis and is not intended for sale in the ordinary course of business.

Asset Management: is an integrated approach, involving all organization departments, to effectively manage existing and new assets to deliver services to customers. The intent is to

maximize benefits, reduce risks and provide satisfactory levels of service to the community in a sustainable manner.

AMP: The LTC Asset Management Plan which combines multi-disciplinary management techniques (technical and financial) over the life cycle of infrastructure assets to provide a specific level of service in the most cost effective manner and manage risks associated with municipal infrastructure assets. This typically includes plans to invest, design, construct, acquire, operate, maintain, renew, replace, and decommission assets.

CAM Program: A set of interrelated or interacting components of the City and its agencies, boards, and commissions that establishes asset management policies and objectives and the processes needed to achieve those objectives. An asset management program also includes the organization structure, roles, responsibilities, business processes, plans, and operations of asset management practices.

Capitalization Threshold: The threshold represents the minimum cost an individual asset must have before it is to be recorded as a capital asset on the statement of financial position.

City: The Corporation of the City of London.

Consequence of Failure: A measure of the direct and indirect impacts on the city in the event of an asset failure.

Core Municipal Infrastructure Asset: Defined by O.Reg 588/17, any municipal infrastructure asset that is a, Water asset that relates to the collection, production, treatment, storage, supply or distribution of drinking water; Wastewater asset that relates to the collection, transmission, treatment or disposal of

wastewater, including any wastewater asset that from time to time manages stormwater; Stormwater management asset that relates to the collection, transmission, treatment, retention, infiltration, control or disposal of stormwater; Road; or Bridge or culvert.

Critical Asset: An asset for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection, rehabilitation, or replacement, and is considered a municipal infrastructure asset.

Customer: Any person or entity who from the municipal infrastructure asset or service, is affected by it or has an interest in it either now or in the future.

Direct Levels of Service: Levels of service that are most representative of a municipal service and can be costed over a 10-year projected period.

Green Infrastructure Asset: Defined by O.Reg. 588/17, means an infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs.

Infrastructure Asset: All or part of physical structures and associated facilities that form the foundation of development, and by or through which a public service is provided to the city, such as highways, bridges, bicycle paths, drinking water systems, social housing, hospitals, courthouses, and schools, as well as any other thing by or through which a public service is provided to the city.

Maintain Current Levels of Service: is defined as the persistent efforts of an organization to manage its assets

through comprehensive lifecycle activities and effectively allocating necessary financial resources with the aim of consistently delivering its services at the current established service levels.

Metrics: Information that supplements levels of service (whether direct, related, or required under Ontario Regulation 588/17). Considered useful but a lagging indicator, meaning they do not readily provide strategic insight or can be easily costed to a municipal service.

Municipal Infrastructure Asset: An infrastructure asset (core and non-core municipal infrastructure assets), including a green infrastructure asset, directly owned by a municipality or included on the consolidated financial statements of a municipality, but does not include an infrastructure asset that is managed by a joint municipal water board.

Public: Residential, commercial, industrial, and institutional partners, and any other party that rely on municipal infrastructure assets.

Related Levels of Service: Levels of service that have a causal relationship with direct levels of service but cannot be easily costed over 10-year projected period.

Replacement Value: The cost LTC would incur to completely replace a municipal infrastructure asset, at a selected point in time, at which a similar level of service would be provided. This definition can also be referred to as 'Replacement Cost'.

Tangible Capital Assets (TCA): A legislative reporting requirement specified by Section PS 3150 in the Public Sector Accounting Board Handbook to identify asset inventories, additions, disposals, and amortization on an annual basis.

Acronyms

ABC: Agencies, Boards, and Commissions

AMP: Asset Management Plan

AODA: Accessibility for Ontarians with Disabilities Act

BEB: Battery Electric Bus

BRT: Bus Rapid Transit

CAM: Corporate Asset Management

CAM Plan: Corporate Asset Management Plan

CEAP: Climate Emergency Action Plan

Commission: London Transit Commission's Members

CUTRIC: Canadian Urban Transit Research and Innovation Consortium

DC: Development Charges

FCI: Facilities Condition Index

FCEB: Fuel Cell Electric Bus

GHG: Green House Gases

GWP: Global Warming Potential

IT: Information Technology

ICIP: Investing in Canada Infrastructure Program

ICIP-PTS: Investing in Canada Infrastructure Program Public Transit Stream

kWH/sf: Kilowatt hours per square foot

LCR: Lifecycle Renewal

LTC: London Transit Commission

LOS: Levels of Service

MESL: Maintain Existing Service Levels

m3/sf: Cubic Meters per Square Foot

MYB: Multi-Year Budget

O. Reg.: Ontario Regulation

RF: Reserve Fund

RV: Replacement Value

TCA: Tangible Capital Asset

VFA: Facilities Management Software

ZEB: Zero Emission Bus

ZETF: Zero Emission Transit Fund

For more information visit **london.ca/CAM** or contact
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