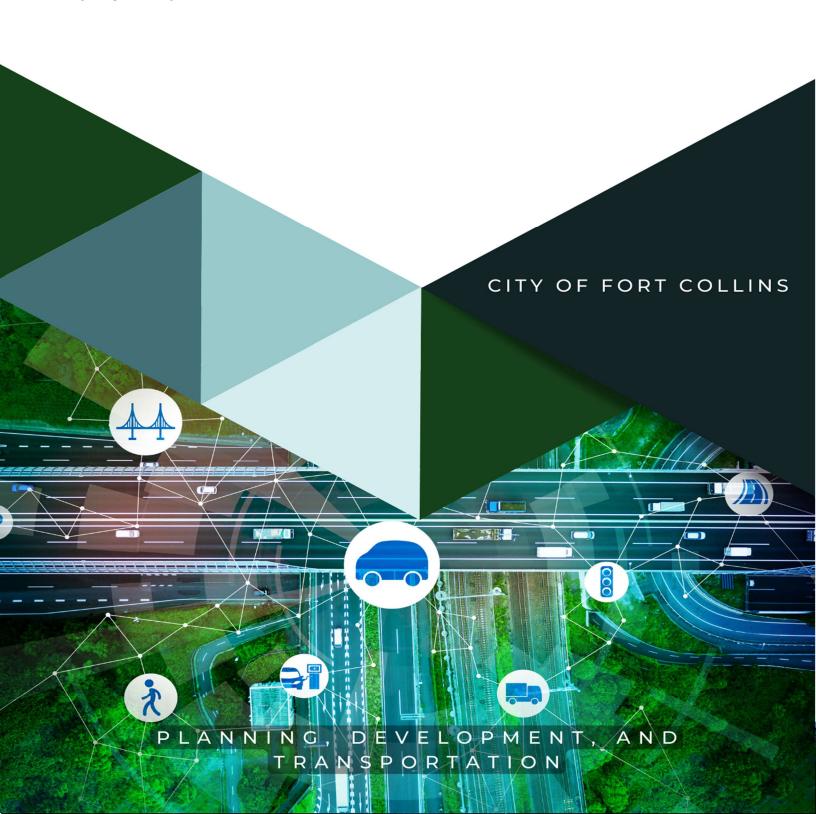
# STATE OF THE INFRASTRUCTURE

JANUARY 2024



#### **Acknowledgements**

Would like to extend a sincere appreciation to the dedicated City staff whose commitment and expertise have been instrumental in the development of this State of the Infrastructure report. Their insights, data collection efforts, and collaborative spirit have greatly enriched the accuracy and comprehensiveness of the report's findings. Their contributions reflect a shared commitment to the betterment of our city's infrastructure and the quality of life for those who live, work, and play here.

Brad Buckman
Jin Wang
Spencer Smith
Kari Craven
Bill Welborn
Tom Knostman
Britney Sorensen
Joseph Fischer
Rich Brewbaker
RJ Glorso
Annabelle Phillips
Gretchen Grambling

"The City of Fort Collins is committed to the long-term replacement of our assets based on a data driven, sustainable and strategic approach. This report is a culmination of significant input and analysis from the various departments responsible for operating and maintaining our City's transportation assets. It highlights the complexity, opportunity and urgency for a clear operational and financial strategy."

Caryn Champine
 Director of PDT



#### **Executive Summary**

This Planning, Development, and Transportation State of the Infrastructure report provides an overview of the transportation infrastructure in our local government, focusing on replacement value, condition, and financial needs. The annual report assesses the current state of transportation assets, identifies areas of concern, and highlights the financial requirements to maintain and improve our transportation system. To continue to meet expected levels of service, it is important to understand the current state of the assets.

The report is a snapshot in time and coincides with the assets respective asset management plans that define more detail around the lifecycle costs, risk management, future demand management, and long-term financial planning. The asset management plans also describe the necessary activities and costs that are needed to maintain or improve the overall state of our assets.

The key asset indicators of replacement value, remaining useful life, condition, and financial need provide a high-level overview to help decision makers better understand the overall health of our transportation assets.



- Average Remaining Useful Life (Current Assets)
- Average Useful Life (Current Assets)

The replacement value analysis reveals the estimated cost of replacing existing transportation assets with equivalent infrastructure. It serves as a benchmark to gauge the value of our transportation system and its importance to our community's

economic vitality and quality of life. The report presents the replacement value figures for bridges, railroad crossings, sidewalks, streets, traffic operations, and transit elements.

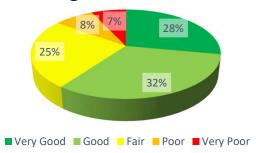
#### \$2.5 BILLION



■ Total Replacement Value (\$M)

Assessing the condition of our transportation infrastructure is essential for effective planning and decision-making. The report provides an evaluation of the condition of the various transportation assets. The assessment helps prioritize maintenance and repair efforts to ensure the safety, reliability, and efficiency of our transportation networks.

# **Infrastructure Assets Average Condition State**



Understanding the financial needs of our transportation infrastructure is crucial for budgeting and securing adequate funding. The report outlines the estimated financial requirements to address maintenance, repairs, and capacity expansions. It highlights the funding gaps and emphasizes the importance of sustainable revenue streams to ensure the long-term viability of our transportation system

By analyzing replacement value, condition, and financial needs, this report underscores the importance of strategic investment in our transportation infrastructure. It serves as a call to action for increased funding, efficient resource allocation, and proactive planning to address the challenges and opportunities ahead. Investing in transportation infrastructure will not only enhance the safety and reliability of our networks but also stimulate economic growth, attract businesses, and improve the overall quality of life for our residents.

To effectively meet the transportation needs of our community, it is vital to prioritize maintenance and repairs, leverage innovative technologies and design practices, and foster

#### **Investment Summary (\$M)**



collaboration among stakeholders. By adopting a comprehensive and forward-thinking approach, our local government can ensure a resilient, efficient, and sustainable transportation system that meets the needs of our evolving community for years to come.





#### Introduction

#### 1.1 Purpose

Transportation services are a vital part of daily life and business for the Planning, Development, and Transportation division for the City of Fort Collins. The purpose of the report is to assess and communicate the current condition, performance, and needs of the City's transportation network.

This report serves several important purposes:

**Evaluation:** It provides an evaluation of the state of transportation assets, including bridges, railroad crossings, sidewalks, streets, traffic, and transit infrastructure. This review helps identify areas of concern, such as deteriorating infrastructure, life expectancy, or financial constraints.

**Planning:** The report aids in strategic planning by informing decision-makers about the current and projected needs of the transportation system. It helps prioritize investments, maintenance efforts, and capacity expansions based on the assessed condition and performance of the assets.

**Prioritization:** By highlighting the state of the assets, the report will support prioritization of limited resources. It assists in allocating budgets effectively, focusing on critical repairs or replacements, and ensuring that investments address the most pressing issues impacting the transportation system.

**Funding and Investment:** The report provides a review of the financial sustainability of the

#### 1.2 Scope

This report focuses on the six primary transportation asset categories and their associated data. Please note this report does not include assets managed by other City

- What assets does PDT own?
- What is the replacement value of those assets?
- What is the remaining useful life of the assets?
- What is the condition of the assets?
- What funding is needed to maintain level of service?

transportation infrastructure. It identifies the funding gaps and the potential need for additional revenue sources.

**Public Awareness:** Sharing the state of transportation assets with the public raises awareness about the condition and performance of the infrastructure that directly impacts their daily lives. It helps citizens understand the challenges faced, the need for investment, and the potential consequences of neglecting infrastructure maintenance and improvements.

Accountability and Transparency: The report promotes accountability by providing a comprehensive and transparent assessment of the transportation system. It holds responsible parties accountable for maintaining and improving infrastructure while allowing stakeholders to track progress over time.

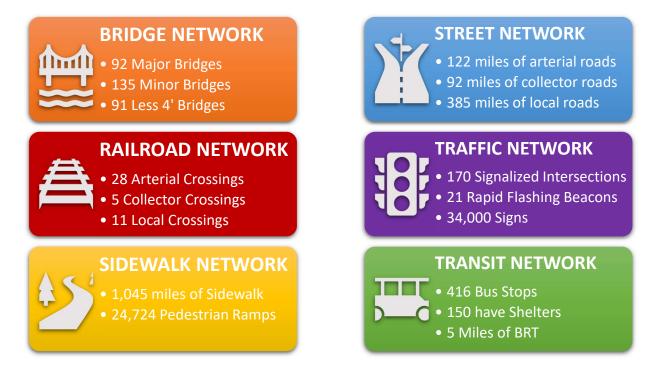
Overall, the purpose of a transportation asset State of the Infrastructure report is to provide a clear and comprehensive picture of the transportation system's condition, identify areas for improvement, inform decision-making, advocate for funding, and ensure the efficient and sustainable operation of the infrastructure.

service areas or other transportation assets managed by City partners (i.e., Downtown Development Authority (DDA), CDOT)

#### State of the Assets

#### 2.1 What We Own

The PDT division manages numerous amounts of transportation assets\* which support stakeholder's levels of service. Following is a highlight of the transportation assets:



\*Not all transportation assets have been included in the asset registers at this time.

#### 2.2 Replacement Value

As of December 31<sup>st</sup>, 2023 the replacement value of the transportation infrastructure assets is estimated at \$2.5 billion. Replacement value is defined as the cost to replace an asset of like capacity and function in today's dollars. The replacement value does not include operations and maintenance of an asset – this information can be found in the asset management plans.

The chart demonstrates the breakdown of replacement value by asset class.



■ Total Replacement Value (\$M)

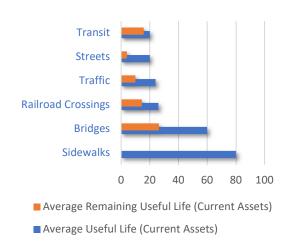
#### 2.3 Remaining Useful Life

Useful life is how long an asset is expected to provide value before needing replacement. Remaining useful life can be calculated by subtracting an assets current age from its expected useful life. An assets life expectancy depends on several factors, including installation practices, maintenance practice, treatment timing, climate, and asset usage.

This indicator along with asset condition can provide valuable insight to a service areas health. However, not all assets are created equal and a longer or shorter remining useful life doesn't mean an asset is in need of being replaced or is in good condition.

Reviewing the remaining useful life of infrastructure assets is essential for effective asset management, cost-efficiency, public safety, regulatory compliance, financial planning, and sustainability. By understanding

the remaining life of assets, stakeholders can make informed decisions that optimize performance, extend asset life, and ensure the continued functionality of critical infrastructure systems.



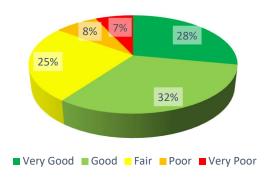
#### 2.4 Asset Condition

Asset condition is a pivotal component of transportation infrastructure as it serves as a key determinant of the overall health and performance of the transportation system. Evaluating the condition of the transportation assets provides critical insights into their current state and identifies areas that may require immediate attention.

Understanding asset condition aids in prioritizing maintenance efforts, allocating resources effectively, and making informed decisions about repairs and replacements. By assessing asset condition, we can accurately gauge the safety, reliability, and efficiency of the transportation system, ensuring that necessary measures are taken to address any vulnerabilities that may impact level of service.

Asset condition is based on a typical 5-value scale (Very Good, Good, Fair, Poor, Very Poor)

that is utilized both nationally and internationally as a universal standard for comparing assets. This report focuses on physical condition of the assets. Function and capacity of assets are identified in the asset management plans.



Overall, 85% of the reported PDT transportation assets are in very good to fair physical condition. 15% that are in poor or very poor may not be meeting expected levels of service and will need renewal in the near future.

#### 2.5 Financial Need

The investment or financial need is the current level at which the City should be investing in its assets to be sustainable long-term. Financial needs are based on asset lifecycle costs of new acquisitions, current operations and maintenance, asset renewals (replacements), and disposals over a 20-year planning period.

#### **Demand Drivers**

- What is the investment needed to enhance level of service?
- What impact does projected growth have on the investment need to manage the assets?
- Is additional funding needed to manage regulatory requirements?

A 10-year Lifecycle Financial Ratio is used to compare the planned budget with the forecasted lifecycle costs. The target range is between 90%-110%. A low ratio may indicate

#### 2.6 Projected Funding Gap

The City's 20-year projected infrastructure gap is \$592.5 million. The funding gap is the difference between anticipated future funding and the projected investment needs in each of the service areas. The financial gap is what's estimated to meet current levels of service. The

that assets are not being funded at the rate that would meet the organization's risk and service level commitments. A high ratio may mean that there's a surplus funding or some "catch-up" going on to address a reported "funding gap."

10-year Lifecycle Financial Ratio

34.8%

Target ranges is between 90% - 110%

Additional investment needs for demand management can be found within the asset management plans. Typically, demand drivers will have some form of impact on lifecycle activities – such as "projected growth" will impact operation costs for additional inspections as well as future maintenance costs for those new assets.

next section will provide additional information in greater detail pertaining to the short (0-5 years), medium (6-10 years), and long term (11-20 years) investment needs. \*Investment Need will include assets that have surpassed useful life, but still may be in good condition.

20-Year Investment Gap Summary by Asset Class (\$M)					
Asset Group	Investment Need*	Available Funding	Financial Gap		
Bridges	\$215.7	\$56.0	\$159.7		
Railroad Crossings	\$6.9	\$2.5	\$4.4		
Sidewalks (TBD)	\$0	\$0	\$0		
Streets	\$689.9	\$288.1	\$401.8		
Traffic	\$40.3	\$31.6	\$8.7		
Transit	\$19.9	\$2.0	\$17.9		
<b>Grand Total</b>	\$972.7	\$380.2	\$592.5		







# State of the Assets by Asset Class





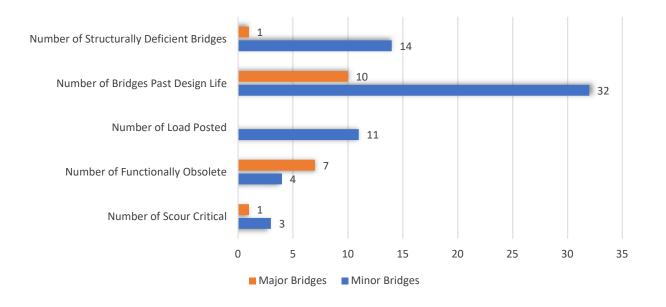




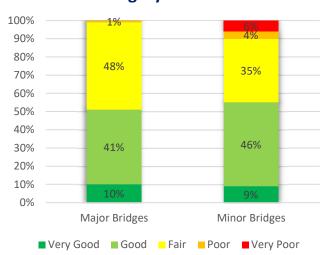
# BRIDGES



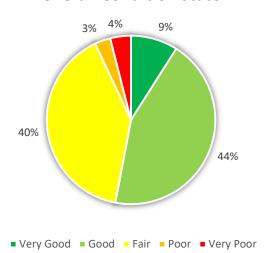
Asset Category	Quantity	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Major Bridges (over 20')	92	each	\$240	50-75
Minor Bridges (4'-20')	135	each	\$198.5	50-75
Less 4' Bridges (small drainage structures)	80	each	\$60	50-75
Bridge Total	307	each	\$498.5	



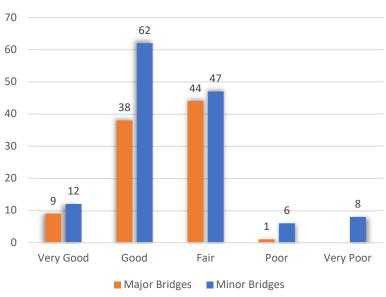
#### **Asset Category Condition State**



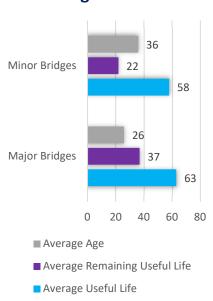
#### **Overall Condition State**



#### **Number of Bridges by Condition State**



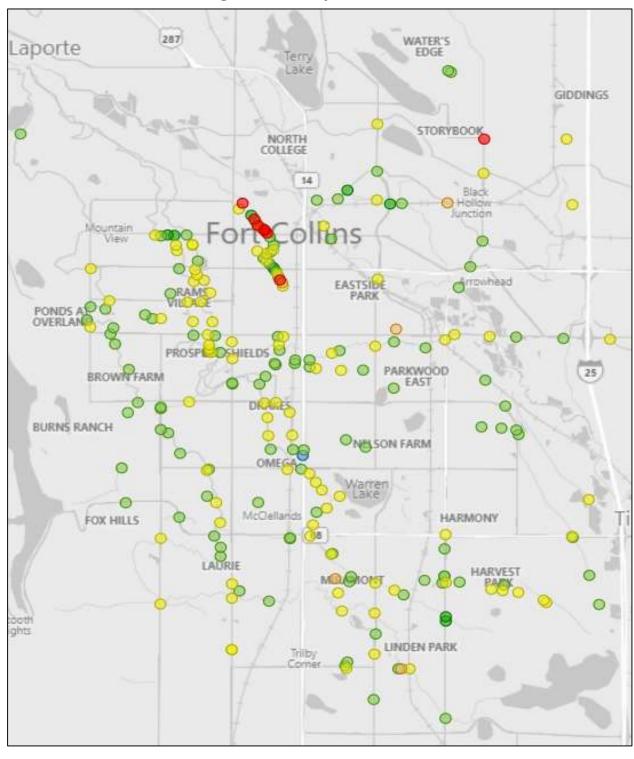
#### **Average Useful Life**



#### **Number of Bridges by Age**



#### **Bridge Location by Condition State**





## 10-Year Lifecycle Financial Ratio

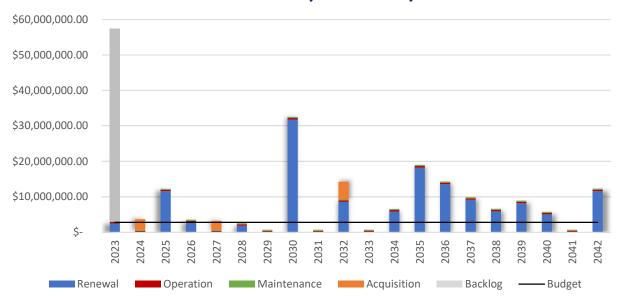
21%

Target ranges is between 90% - 110%

#### **Investment Summary**



#### 20-Year Lifecycle Summary



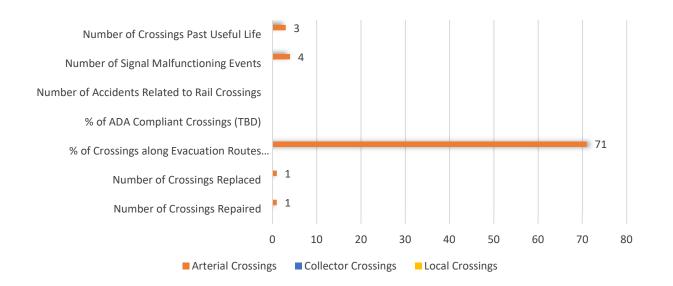
#### **Funding Source Summary**



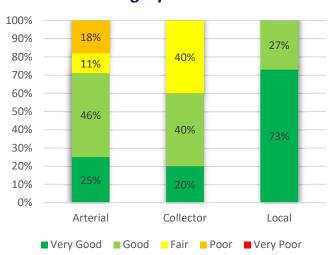


# RAILROADS =

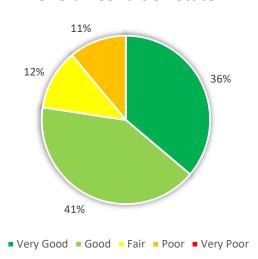
Asset Category	Quantity	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Arterial Crossings	28	each	\$6.5	15-20
Collector Crossings	5	each	\$0.9	20-35
Local Crossings	11	each	\$2.3	35+
Overhead Crossing	1	each	n/a	n/a
Railroad Total	45	each	\$9.7	



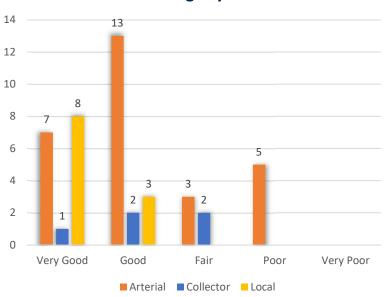
#### **Asset Category Condition State**



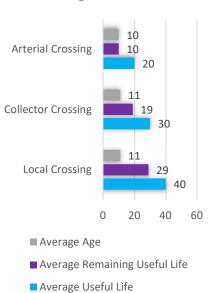
#### **Overall Condition State**



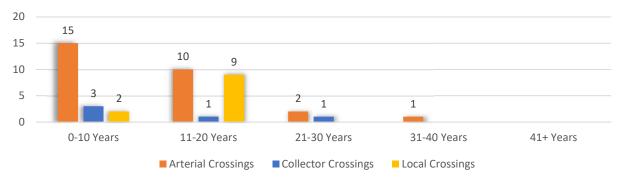
#### **Number of Crossings by Condition State**



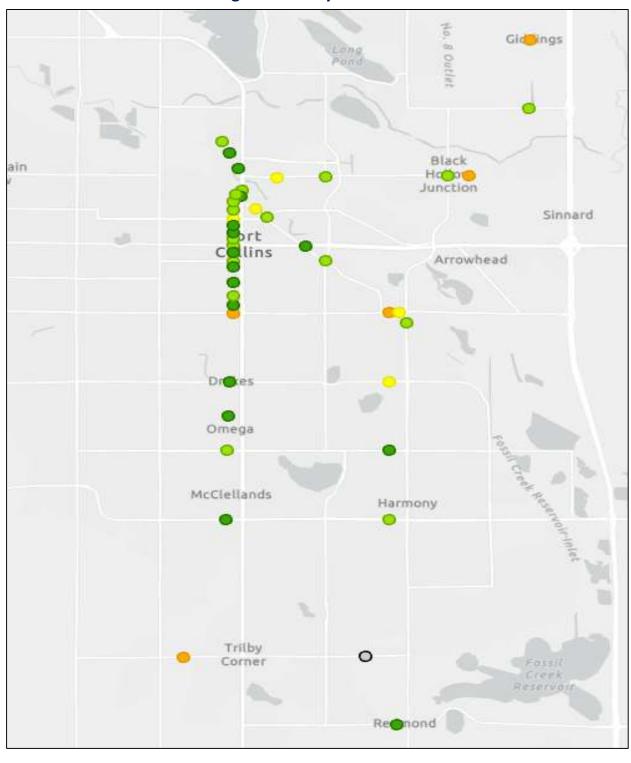
#### **Average Useful Life**



#### **Number of Crossings by Age**



#### **Crossing Location by Condition State**





#### **Investment Summary**

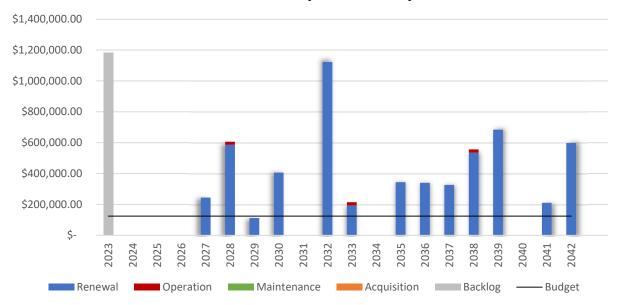
## 10-Year Lifecycle Financial Ratio

34%

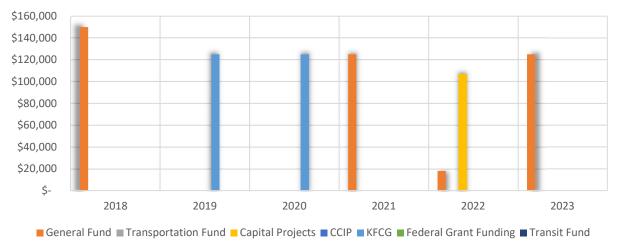
Target ranges is between 90% - 110%

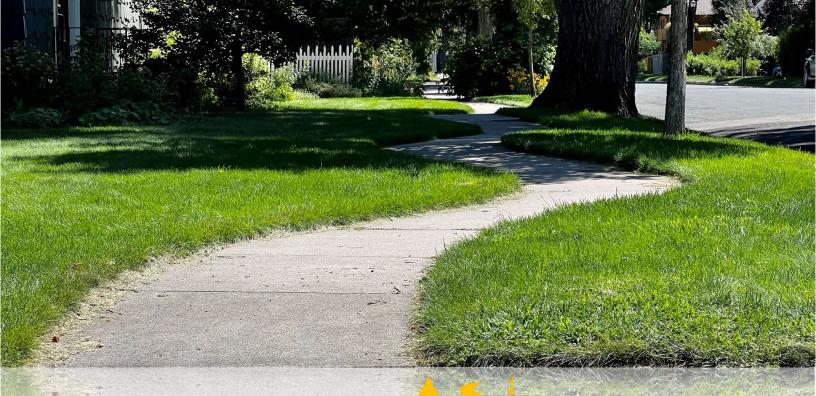


#### **20-Year Lifecycle Summary**



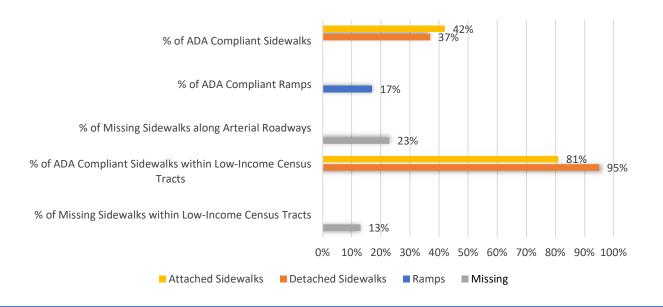
#### **Funding Source Summary**



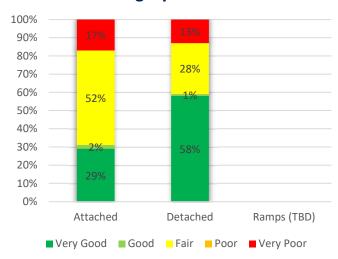


# **SIDEWALKS**

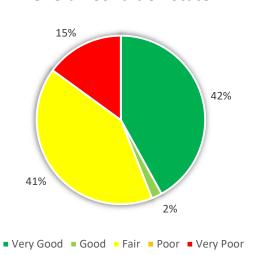
Asset Category	Quantity	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Attached Sidewalks	13,224,520	square feet	\$330.6	80
Detached Sidewalks	10,048,629	square feet	\$251.2	80
Sidewalk Total	23,273,149	square feet	\$581.8	
Ramps	24,724	each	\$123.6	80
Total			\$705.4	



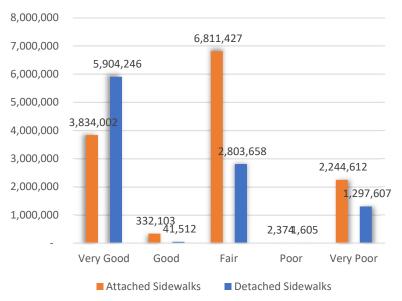
#### **Asset Category Condition State**



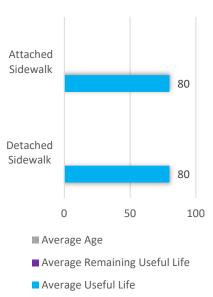
#### **Overall Condition State**



#### **SF of Sidewalks by Condition State**



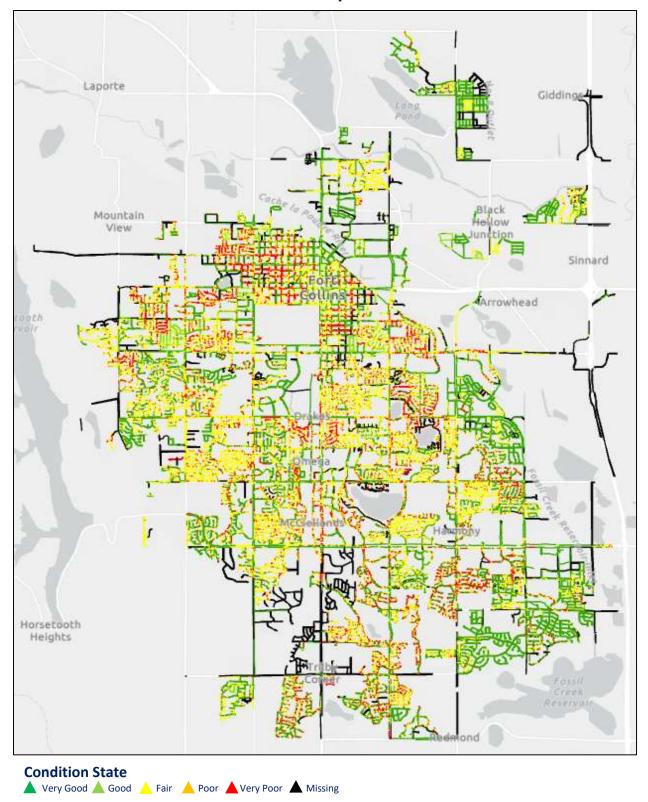
#### **Average Useful Life**



#### SF of Sidewalks by Age



#### **Sidewalk Location by Condition State**



#### **Investment Summary**

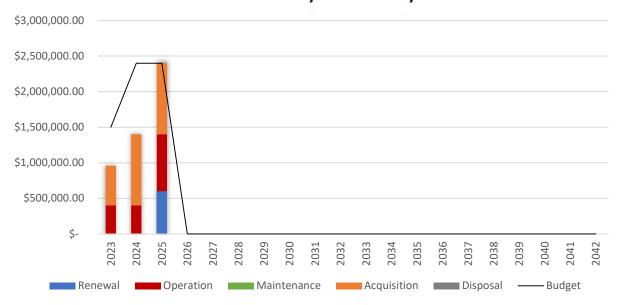
# **10-Year Lifecycle** Financial Ratio

0%

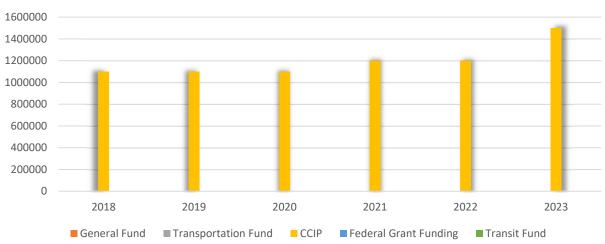
Target ranges is between 90% - 110%



#### **20-Year Lifecycle Summary**



#### **Funding Source Summary**

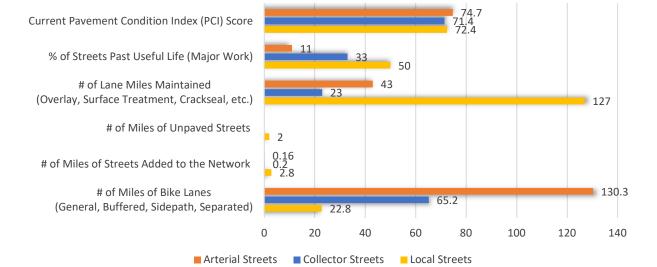




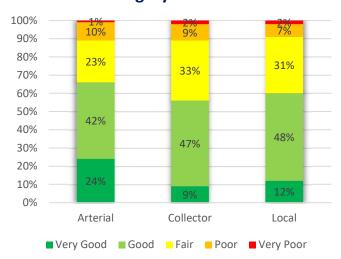
# STREETS

Asset Category	Quantity (Centerline Miles)	Quantity (Lane Miles)*	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Arterial Streets	122	495	miles	\$281.6	20
Collector Streets	92	321	miles	\$183.1	20
Local Streets	382	1178	miles	\$671.7	20
Alleys (AC, PCC, Unpaved)	27	45	miles	\$17.7	15-20
Streets Total	596	2039	miles	\$1,154.1	

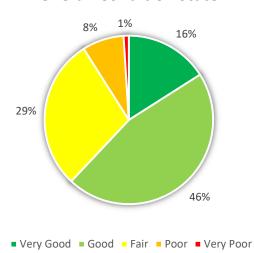
<sup>\*</sup>Lane Mile is equal to  $12' \times 5{,}280' = 63{,}360 \text{ sf } (7{,}040 \text{ sy}) \text{ of maintained road area.}$ 



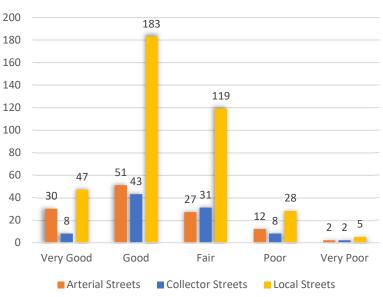
#### **Asset Category Condition State**



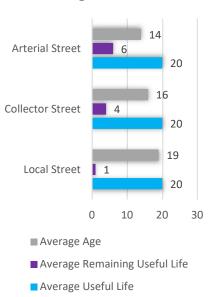
#### **Overall Condition State**



#### **Miles of Streets by Condition State**



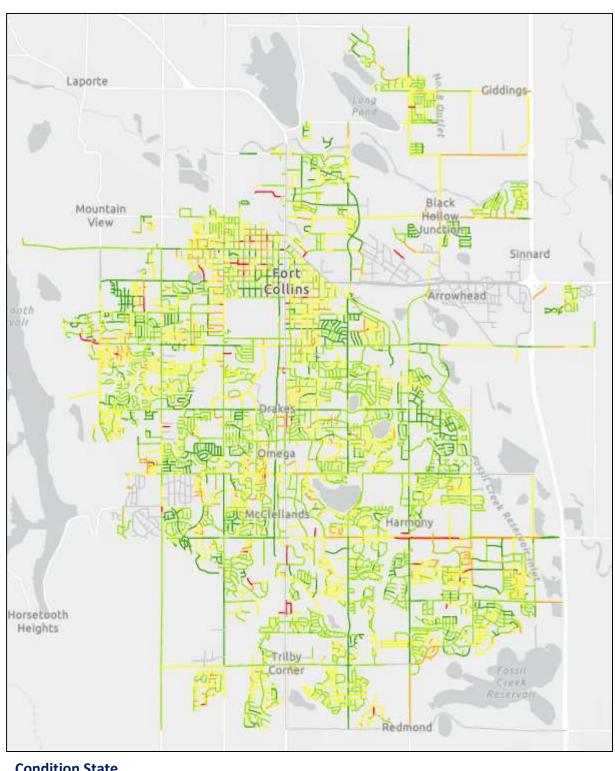
#### **Average Useful Life**



#### Miles of Streets by Age



#### **Street Location by Condition State**





# 10-Year Lifecycle Financial Ratio

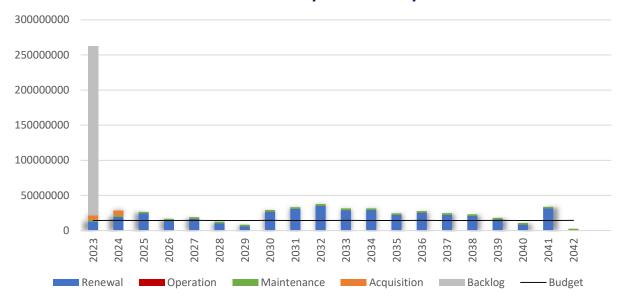
28%

Target ranges is between 90% - 110%

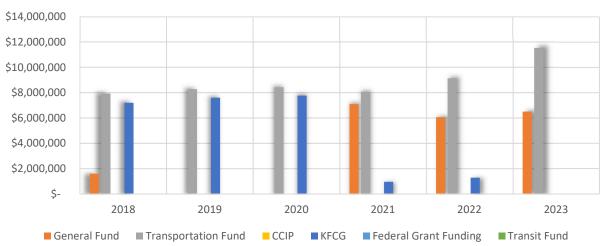
#### **Investment Summary**



#### **20-Year Lifecycle Summary**

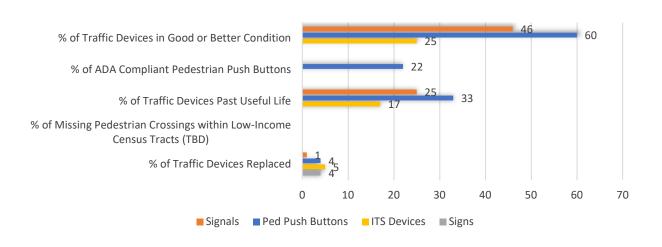


#### **Funding Source Summary**

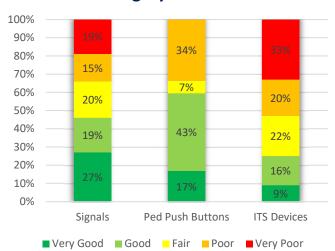




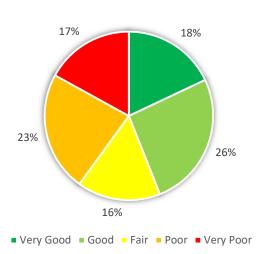
Asset Category	Quantity	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Traffic Signals	247	each	\$45.3	40
ITS Devices	900	each	\$4.5	15
Pedestrian Push Buttons	1,112	each	\$1.3	12
Traffic/School Cabinets	184/116	each	\$3.8	15-20
Fiber	66	miles	\$12.1	25
Signs	34,000	each	\$5.1	15-30
Traffic Total			\$72.1	



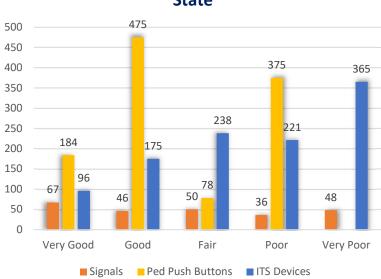
#### **Asset Category Condition State**



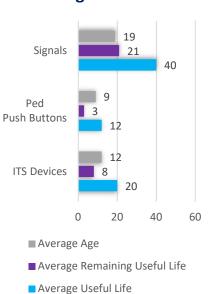
#### **Overall Condition State**



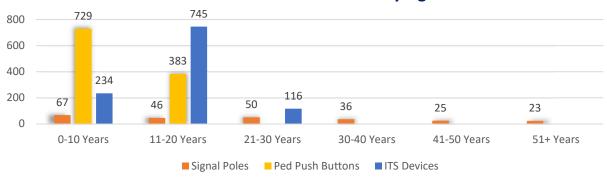
### Number of Traffic Devices by Condition State



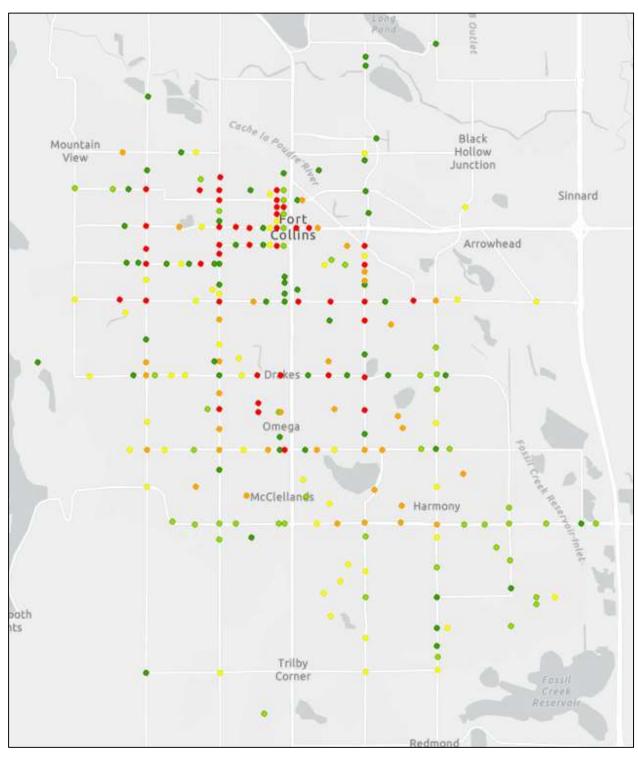
#### **Average Useful Life**



#### **Number of Traffic Devices by Age**



#### **Traffic Signal Location by Condition State**





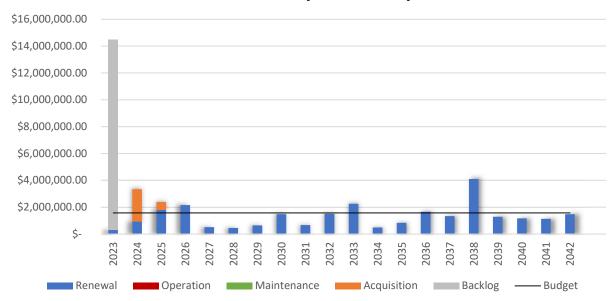
## 10-Year Lifecycle Financial Ratio

57%

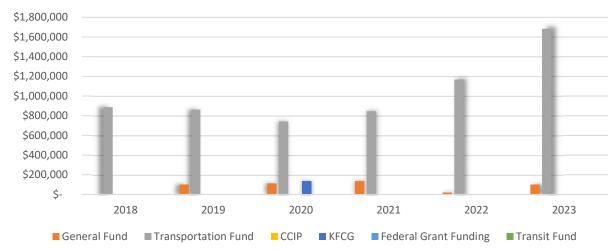
Target ranges is between 90% - 110%



#### **20-Year Lifecycle Summary**



#### **Funding Source Summary**





# TRANSIT

Asset Category	Quantity	Unit	Replacement Value (\$M)	Useful Life (Yrs)
Type 1 Bus Stop (Sign Only)	82	each	\$1.3	20-30
Type 2 Bus Stop (Bench)	166	each	\$4.1	20-30
Type 3 Bus Stop (Shelter)	150	each	\$15.1	20-30
Type 4 Bus Stop (MAX BRT Station)	18	each	\$6.7	20-30
Transit Total	416	each	\$27.2	

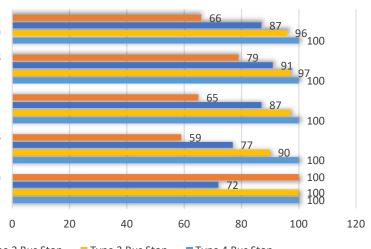
% of ADA Compliant Bus Stops (Pad and Connecting Path/Sidewalk)

% of Bus Stops with ADA Compliant Pads

% of ADA Compliant Bus Stops within Low-Income Census Tracts

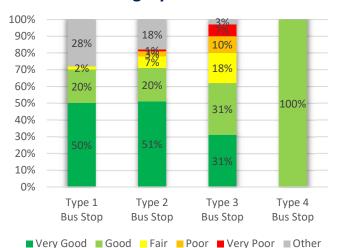
% of ADA Compliant Connecting Path/Sidewalks within Low-Income Census Tracts

% of Bus Stops in Good or Better Condition that have High Volume Ridership

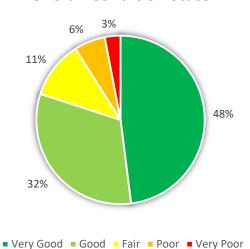


■Type 1 Bus Stop ■Type 2 Bus Stop ■Type 3 Bus Stop ■Type 4 Bus Stop

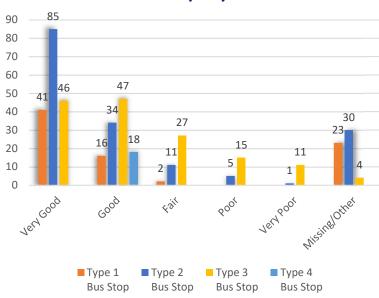
#### **Asset Category Condition State**



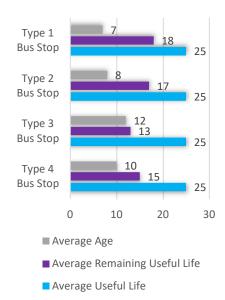
#### **Overall Condition State**



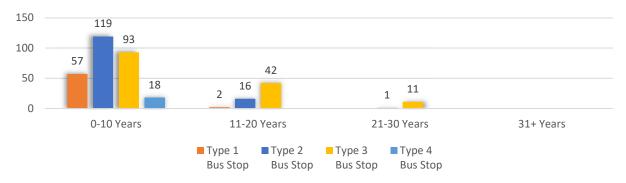
#### **Number of Bus Stops by Condition State**



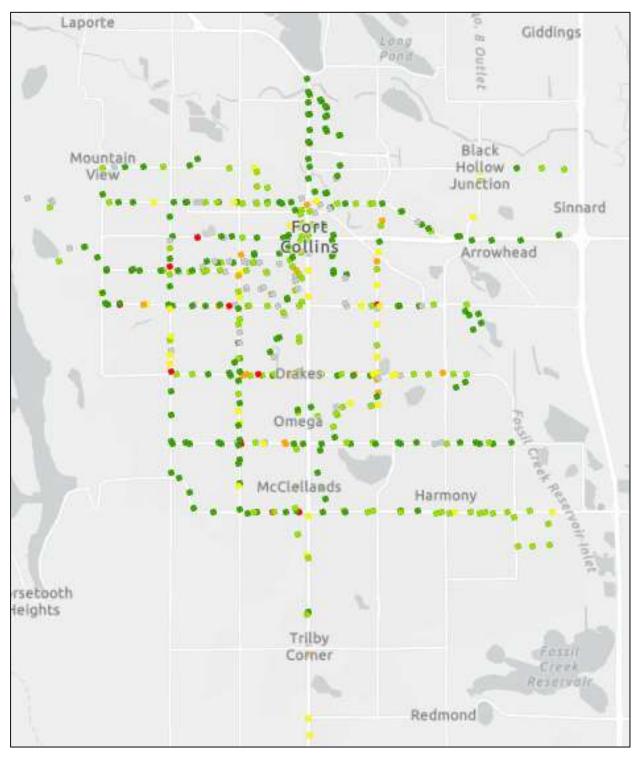
#### **Average Useful Life**



#### **Number of Bus Stops by Age**



#### **Bus Stop Location by Condition State**





#### **Investment Summary**

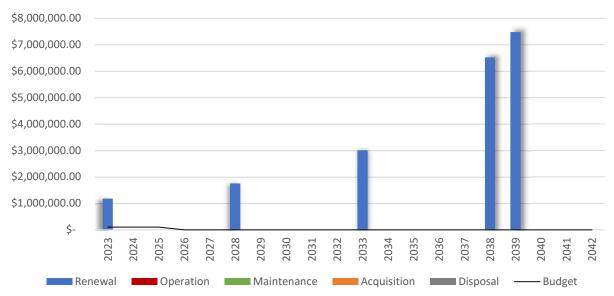
# 10-Year Lifecycle Financial Ratio

34%

Target ranges is between 90% - 110%



#### **20-Year Lifecycle Summary**



#### **Funding Source Summary**



#### **Definitions**

**Asset** – an item or thing that has potential or actual value or benefit to an organization, council, or community.

**Asset Class** – a collection of assets which share similar construction, maintenance, condition, and availability standards. Roadways, sidewalks, and street signs are all examples of asset classes.

Asset Management (AM) – provide effective control and governance to infrastructure assets to realize value through managing risk and opportunity, in order to achieve the desired balance of cost, risk & performance.

Capital Infrastructure Asset – infrastructure assets are long-lived capital assets that normally are stationary in nature and normally can be preserved for a significantly greater number of years than most capital assets. Examples of infrastructure assets include roads, sidewalks, bridges, tunnels, drainages systems, water and sewer systems, dams, and lighting systems.

**Financial Strategy** – a strategy for budgeting available resources to provide the defined level of service across the full life cycle of all managed assets, typically through the funding and implementation of a long-range plan that emphasizes cost-effective periodic maintenance activities.

**Function** – the asset(s) are able to meet the intended service demand.

**Investment Gap** – the difference between the investment need and the available funding projected over a period of time.

**Investment Need** – the level the City should be investing in its assets to meet the rate of renewals to continue to meet levels of service.

Level of Service – A quantifiable measure of a combination of parameters that reflect social, economic, and environmental outcomes that the organization delivers. Levels of service statements describe the outputs or objectives an organization or activity intends to deliver to customers. Parameters can be aspects or characteristics of a service such as accessibility, affordability/cost, efficiency, quality, quantity, reliability, responsiveness, and safety.

**Lifecycle Cost** – means the total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, depreciation, rehabilitation, and disposal costs.

**Remaining Useful Life** – the difference between current age of an asset and the anticipated service life of the asset.

**Replacement Value** – the cost of replacing an existing asset with a like asset in today's dollars.

**Sustainability** – infrastructure that meets the needs of the present without compromising the ability of future generations to meet their own needs. In the context of AM it is about meeting the needs of the future by balancing social, economic, cultural, and environmental outcomes or needs when making decisions today.

**Useful Life** – the expected period of time which an asset provides value to the community.

**Value** – assets exist to provide tangible, non-tangible, financial or non-financial benefits to council and community in accordance with council objectives.

### **Asset Condition Ratings**

Asset condition is based on a typical 5-value scale (Very Good, Good, Fair, Poor, Very Poor) that is utilized both nationally and internationally as a universal standard for comparing assets. This report focuses on physical condition of the assets.

Grade	Rating	Estimated Remaining Useful Life	Definition
1	Very Good	(80-100%)	Fit for Future The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and sever weather events.
2	Good	(60-80%)	Adequate for Now  The infrastructure in the system or network is in good to excellent condition, some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.
3	Fair	(40-60%)	Requires Attention The infrastructure in the system or network is in fair to good condition, shows signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, increasing vulnerability to risk.
4	Poor	(20-40%)	At Risk  The infrastructure is in fair to 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. Condition and capacity are of serious concern with strong risk of failure.
5	Very Poor	(0-20%)	Failing/Critical, Unfit for Sustained Service The infrastructure in the system is in unacceptable condition with widespread, advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

If condition data has not been collected, ratings can be estimated and translated from the remaining useful life of the asset(s) to represent the condition grade.

#### **Gaps and Assumptions**



#### Gaps:

 Inventory of less than 4' bridges owned by Engineering.

#### **Assumptions:**

- Replacement values are extrapolated based on deck area.
- Condition ratings are based on visual inspections and expert opinions.



#### Gaps:

- ADA compliance for all crossings.
- Quantify trolley line crossings.

#### **Assumptions:**

- Replacement values are based on historic projects.
- Useful life based on expert opinion of staff.
- Condition ratings were based on visual inspections and expert opinions.



#### Gaps:

- Age data for all sidewalk segments.
- Collect condition data in 5-value scale.
- Age data required to perform lifecycle summary.

#### **Assumptions:**

- % of ADA compliant ramps based on estimated number of improved ramps.
- Condition data utilizes ADA compliance for 5-value scale.



#### Gaps:

• Complete inventory of local road area.

#### **Assumptions:**

 Utilizing historic local road area data to calculate road replacement values.



#### Gaps:

- Utilizing only signal pole, ITS (Intelligent Transportation System), and Push Button condition data.
- Quantify underground infrastructure.
- Quantify pedestal and button poles.
- Quantify ITS devices.
- Capture underground and signal head condition data.

#### **Assumptions:**

- Condition ratings are based on age, visual inspections, and staff opinions.
- Replacement values are based on contracted prices. Cost savings if work completed by City staff.
- Useful life based on expert opinion of FHWA and CDOT.



#### Gaps:

- Type 4 bus stop condition/compliance data.
- Age data for all bus stop assets.
- Spatial relationships for condition data within GIS.
- Utilizing only pad condition data.
- Update connecting path within GIS data.

#### **Assumptions:**

- Replacement values are extrapolated based on bus stop type.
- Lifecycle summary age information for renewals is based on condition data.
- Useful life average age information is based on condition data.

#### **Data Assurance**

Each asset class was qualitatively assessed by City staff for data assurance using the following measures:

Accuracy	Refers to the degree to which collected information reflects the true and precise values of the measured attributes. It involves minimizing errors, biases, and variations during the data gathering process to ensure that the collected data faithfully represents the real-world assets and its attributes.
Completeness	Refers to the extent to which all relevant and necessary information about each asset is captured and included in the dataset. It ensures that no critical details or attributes are omitted, allowing for a comprehensive understanding of the asset's characteristics, condition, and context.

Asset Class	Accuracy	Completeness
Bridges	Very High	Medium
Railroad Crossings	Medium	Medium
Sidewalks	High	High
Streets	Very High	Very High
Traffic	Medium	High
Transit	Very High	High

Accuracy	Description
Very High	Dataset is current. Estimated to be accurate +/-2%.
High	Dataset is estimated to be accurate +/- 10%.
Medium	Dataset is substantially complete but up to 50% is extrapolated data and accurate +/- 25%.
Low	Dataset is not documented or entered into asset register. Most data is estimated or extrapolated and accurate +/- 40%.
Very Low	None or very little data has been collected for the asset.

Completeness	Description
Very High	Dataset is complete and covers the entire set of assets and attributes. Estimated to be >98%.
High	Dataset is primarily complete and covers most of the assets and attributes. Estimated to be >90%.
Medium	Most critical assets captured, but there may be some gaps. Portions of non-major assets are missing information. Estimated to be >50%.
Low	Significant gaps within the dataset. Estimated to be <50%.
Very Low	None or very little data has been collected for the asset.

