



Township of Strong Asset Management Plan

Council Presentation
October 26, 2021

Introduction

Asset Management Plan



- Watson & Associates Economists Ltd. (Watson) was retained to develop an Asset Management Plan for the Township of Strong (Township)
- The Asset Management Plan is a comprehensive long-term plan for the Township's capital assets, developed with regard for:
 - Level of service objectives;
 - Full lifecycle of the assets; and
 - Legislative requirements (i.e., Ontario Regulation 588/17).



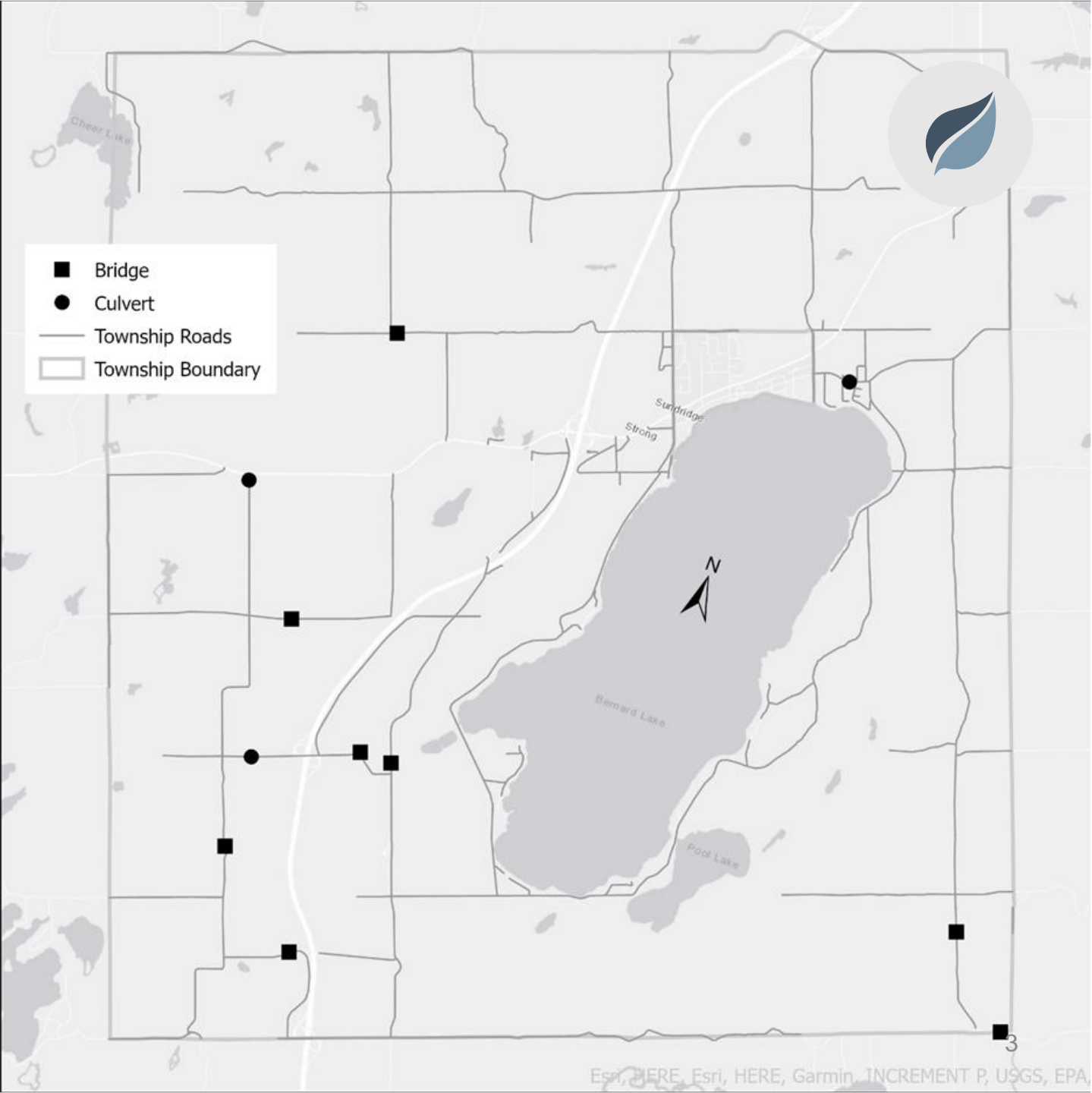
Detailed Review of AMP Components

Bridges & Culverts Example

Bridges and Culverts

Summary data

Surface Type	Count	Replacement Cost
Bridges	8	\$5,170,000
Structural Culverts	3	\$1,010,000
Total	11	\$6,190,000





Bridges and Culverts

Asset Condition



- Bridges inspected every two years to meet requirements of O. Reg. 104/97

Road Surface	Count	Condition (Weighted Average)	Average Condition State
Bridges	8	74	Good
Structural Culverts	3	72	Good
Total	11	74	Good

BCI Range	Condition State	Bridge Photos
$70 < \text{BCI} \leq 100$	Good	
$60 < \text{BCI} \leq 70$	Fair	No Example Photos
$0 < \text{BCI} \leq 60$	Poor	

Bridges and Culverts

Levels of Service: Introduction



- A fully developed Levels-of-Service Framework describes qualitatively and quantitatively the outputs or objectives the Township intends its assets to deliver.

Concept	Definition	Examples
Service attribute	Aspects or characteristics of a service	Accessibility, cost, efficiency, quality, quantity, reliability, responsiveness, and safety
Levels of service statement	What the organization intends to deliver, described from the perspective of users of a service	Provides a comfortable ride for road users
Performance measures	Quantitative measures, for both internal and external audiences	Pavement Condition Index

Bridges and Culverts



Community Levels of Service

Service Attribute	Community Levels of Service
Scope	Bridges and culverts are utilized by passenger vehicles, commercial vehicles, forestry vehicles, emergency vehicles, pedestrians, cyclists, ATVs, snowmobiles, and horseback-riders.
Quality	The table shown earlier details how BCI is segregated into qualitative condition states.
	The Township strives to maintain bridge surfaces to a level that supports a comfortable travel experience for users.
Cost	The Township strives to deliver transportation services efficiently and at a cost that is affordable to Township taxpayers.

Bridges and Culverts



Technical Levels of Service

Service Attribute	Performance Measure	Current Performance	Proposed Levels of Service
Scope	Percentage of bridges in the Township with loading or dimensional restrictions	63%	➡
Quality	For bridges in the Township, the average bridge condition index value	74	➡
	Number of bridges in the poor condition state	0	➡
	For structural culverts in the Township, the average bridge condition index value	72	➡
	Number of structural culverts in the poor condition state	0	➡
	Average condition of non-structural culverts	Not currently available	
	Number of non-structural culverts in the poor condition state	Not currently available	

Bridges and Culverts

Lifecycle management strategies: Introduction



- A lifecycle management strategy is a plan for how to manage capital lifecycle activities related to an asset over its full lifecycle.
- There are two distinct components to a lifecycle management strategy.
 - A high-level model used to forecast lifecycle costs (capital) and performance.
 - A decision-making process for day-to-day asset management.

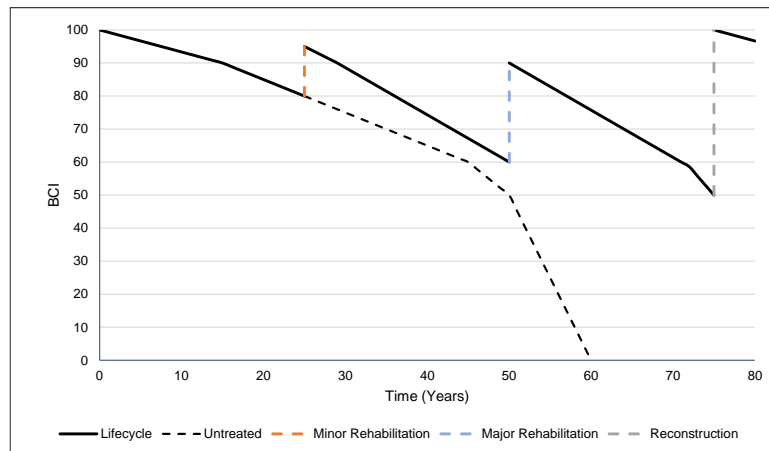
Bridges and Culverts

Lifecycles

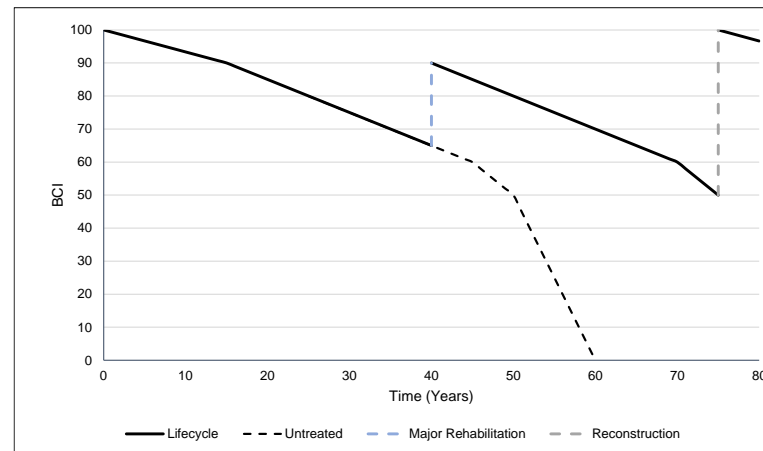


Lifecycle Illustrations:

Bridges



Concrete Culverts



Lifecycle Activities:

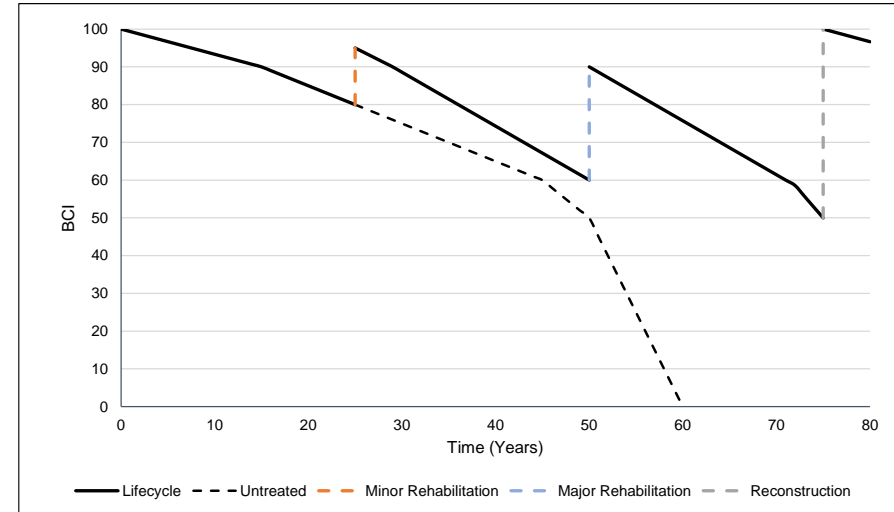
- Minor rehabilitation
 - Major rehabilitation
 - Reconstruction
- Major rehabilitation
 - Reconstruction

Bridges and Culverts

Estimating average annual lifecycle costs – Percentage of Replacement Cost



Lifecycle Activity	Year	Cost (% of Replacement Cost)
Minor rehabilitation	25	15%
Major rehabilitation	50	35%
Reconstruction	75	100%
Total		150%



$$\text{Average annual lifecycle cost} = \frac{150\%}{75} = \mathbf{2\% \text{ of replacement value}}$$

Bridges and Culverts

Average annual lifecycle funding need – whole portfolio



Structure Type	Total Lifecycle Cost as a Percentage of Replacement Cost	Lifespan	Average Annual Lifecycle Cost as a Percentage of Replacement Cost	Replacement Cost	Average Annual Lifecycle Cost
Bridge	150%	75	2.0%	\$5,172,300	\$103,400
Structural Culvert - Concrete	135%	75	1.8%	\$739,200	\$13,300
Structural Culvert - Steel	100%	50	2.0%	\$275,200	\$5,500
			Total	\$6,186,700	\$122,300

Bridges and Culverts

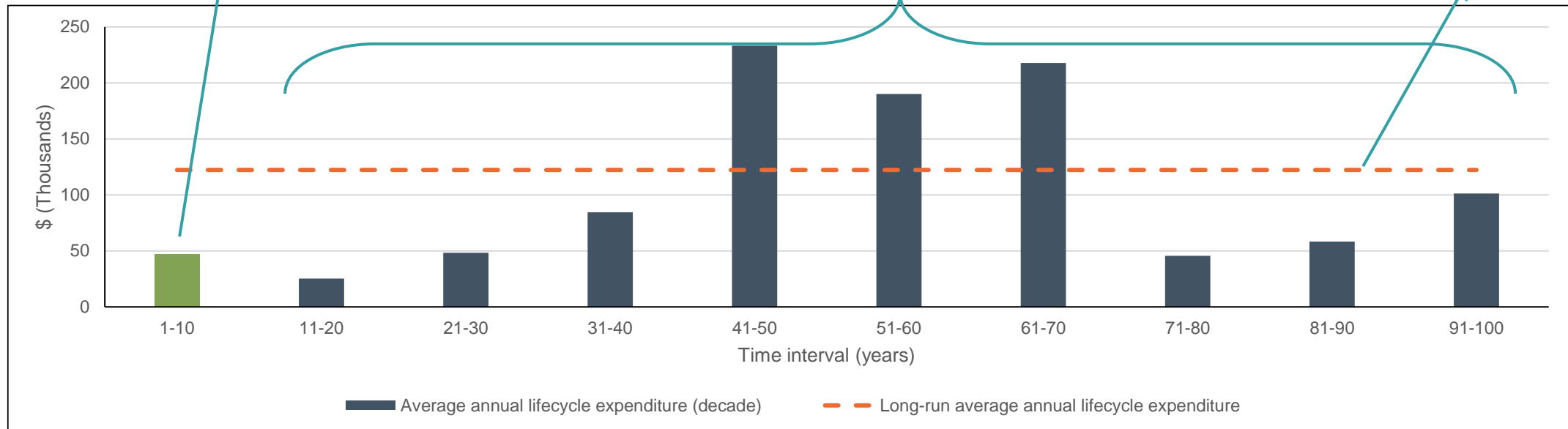
Long-run capital forecast: average annual expenditures by decade



Short-term priorities based on the Township's biennial bridge inspections

Long-term needs estimated based on current condition and age profile of the structures and lifecycle forecasting

Annual lifecycle funding target based on the lifecycle management strategies discussed earlier



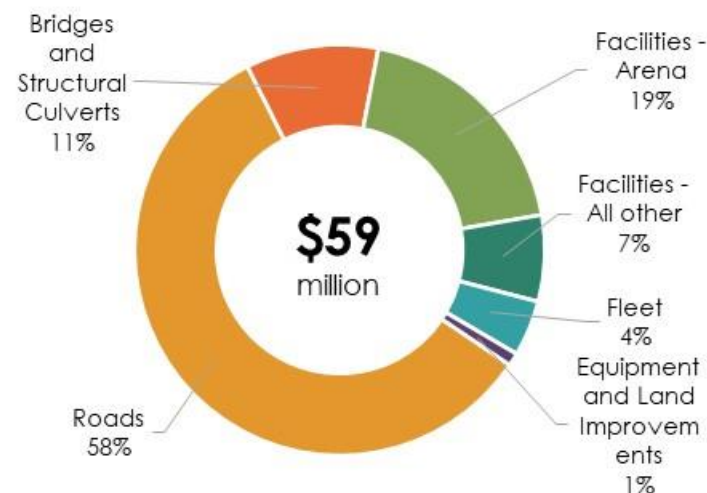


Asset Summary Information

Assets & Replacement Costs



Asset Replacement Cost



Asset Class	Description
Roads	143 centreline km roads (2% HCB, 27% LCB, 71% Gravel)
Bridges and Culverts	8 bridges; 3 structural culverts
Facilities	11 facilities ranging in size from the SSJ Arena to small storage buildings at the landfills
Fleet	19 vehicles with 18 supporting assets such as attachments and trailers
Equipment and Land Improvements	35 assets ranging from a recycling baler to a UV water filtration system.



Technical Levels of Service

Technical Levels of Service

Transportation (part 1)



Service Attribute	Performance Measure	2020 Performance	Target
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Township	Not Applicable	➡
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Township	Not Applicable	➡
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Township	1.8 km/km ²	➡
	Percentage of bridges in the Township with loading or dimensional restrictions	63%	➡
Cost	Annual road maintenance costs as a percentage of reconstruction cost for paved roads	0.34%	⬇
	Annual road maintenance costs as a percentage of reconstruction cost for gravel roads	1.31%	⬇

Technical Levels of Service

Transportation (part 2)



Service Attribute	Performance Measure	2020 Performance	Target
Quality	For paved roads in the municipality, the average pavement condition index value	76	↑
	Lane-kilometres of paved roads in a condition state of poor or worse (Percentage of total lane-kilometres)	15.7 km (18%)	↓
	For unpaved roads in the municipality, the average surface condition (Good = 3; Fair = 2; Poor = 1)	1.64 (Fair)	↑
	Lane-kilometres of high-volume gravel roads in a condition state of Fair or Poor (Percentage of total lane-kilometres)	106.8 km (81%)	↓
	Lane-kilometres of Low-volume gravel roads in a condition state of poor (Percentage of total lane-kilometres)	33.3 km (48%)	↓
	Percentage of minimum maintenance standard deficiencies remedied within prescribed timeframe	Not currently available	
	For bridges in the municipality, the average BCI value	74	→
	Number of bridges in the poor condition state	0	→
	For structural culverts in the municipality, the average BCI value	72	→
	Number of structural culverts in the poor condition state	0	→
	Average condition of non-structural culverts	Not currently available	
	Number of non-structural culverts in the poor condition state	Not currently available	

Technical Levels of Service



Facilities

Service Attribute	Performance Measure	2020 Performance	Target
Quality	Average condition of facilities	Good	➡
Accessibility	Number of facilities with accessibility concerns	1	0

Fleet

Service Attribute	Performance Measure	2020 Performance	Target
Reliability	Average reliability of vehicles as rated by staff (Good = 3; Fair = 2; Poor = 1)	2.74 (Good)	⬆
	Count of vehicles with condition rating of Poor	0	➡
Efficiency	Litres of diesel per 100 km for vehicles with odometers	Not currently available	
	Litres of gasoline per 100 km for vehicles with odometers	Not currently available	
	Litres of gasoline used for vehicles and equipment without odometers	Not currently available	

Technical Levels of Service

Equipment and land improvements



Service Attribute	Performance Measure	2020 Performance	Target
Reliability	Count of pieces of equipment with condition rating of Poor or worse	2	↓
	Count land improvement assets with condition rating of Poor or worse	0	→

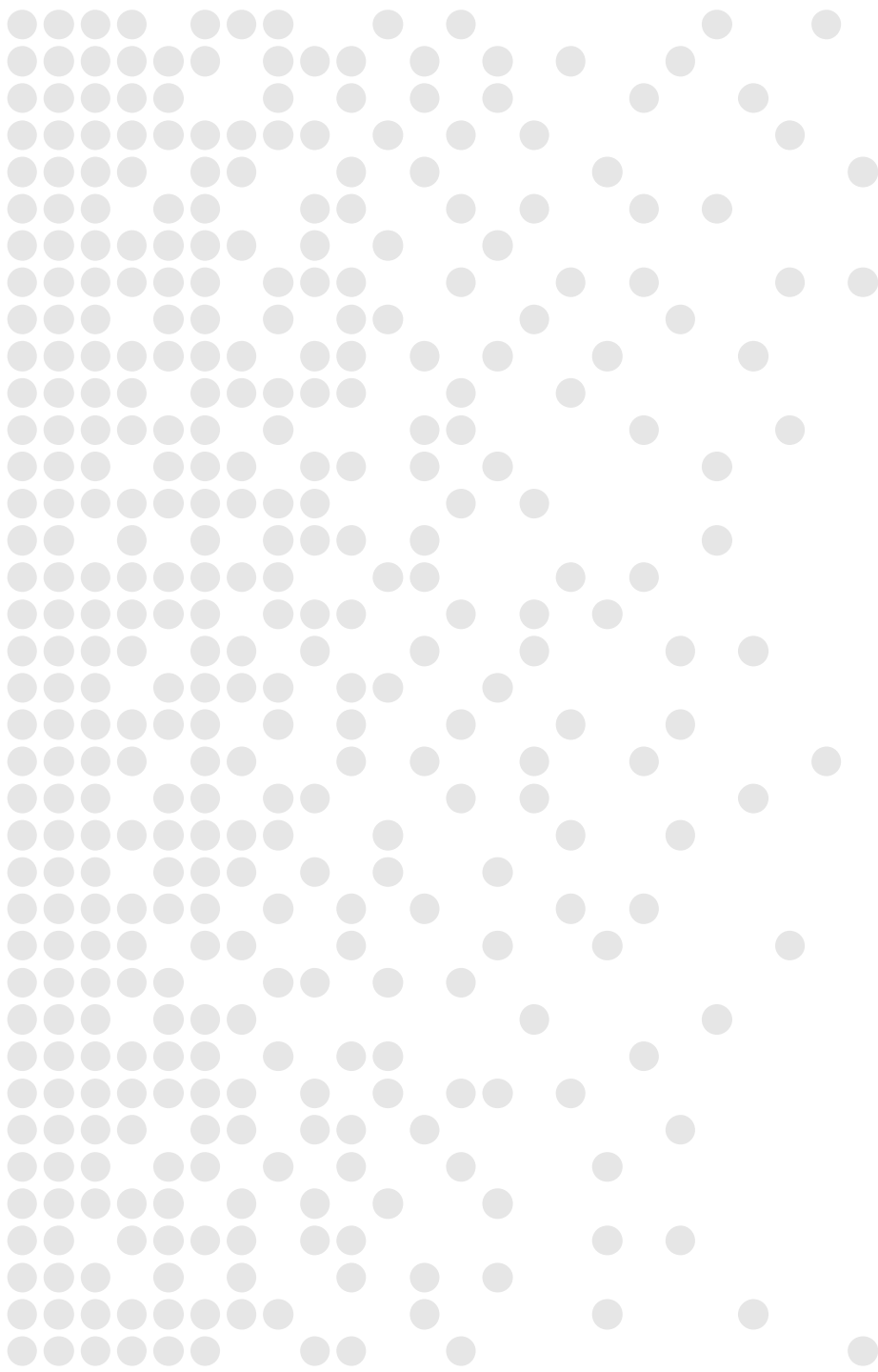


Lifecycle Management Strategies

Lifecycle Management Strategies



Category	10-year forecast	Long-run Lifecycle Needs
Roads	<ul style="list-style-type: none">• Lifecycle modelling	<ul style="list-style-type: none">• Lifecycle modelling
Bridges & Culverts	<ul style="list-style-type: none">• Bridge inspections	<ul style="list-style-type: none">• Lifecycle modelling
Facilities	<ul style="list-style-type: none">• Condition assessment for arena and staff forecasts for all other	<ul style="list-style-type: none">• Annual reinvestment rates identified in the Canadian Infrastructure Report Card (for complex buildings) and average from 10-year forecast (for simpler buildings)
Fleet, Equipment and Land Improvements	<ul style="list-style-type: none">• Age-based lifecycle modelling with adjustments based on staff input	<ul style="list-style-type: none">• Age-based lifecycle modelling



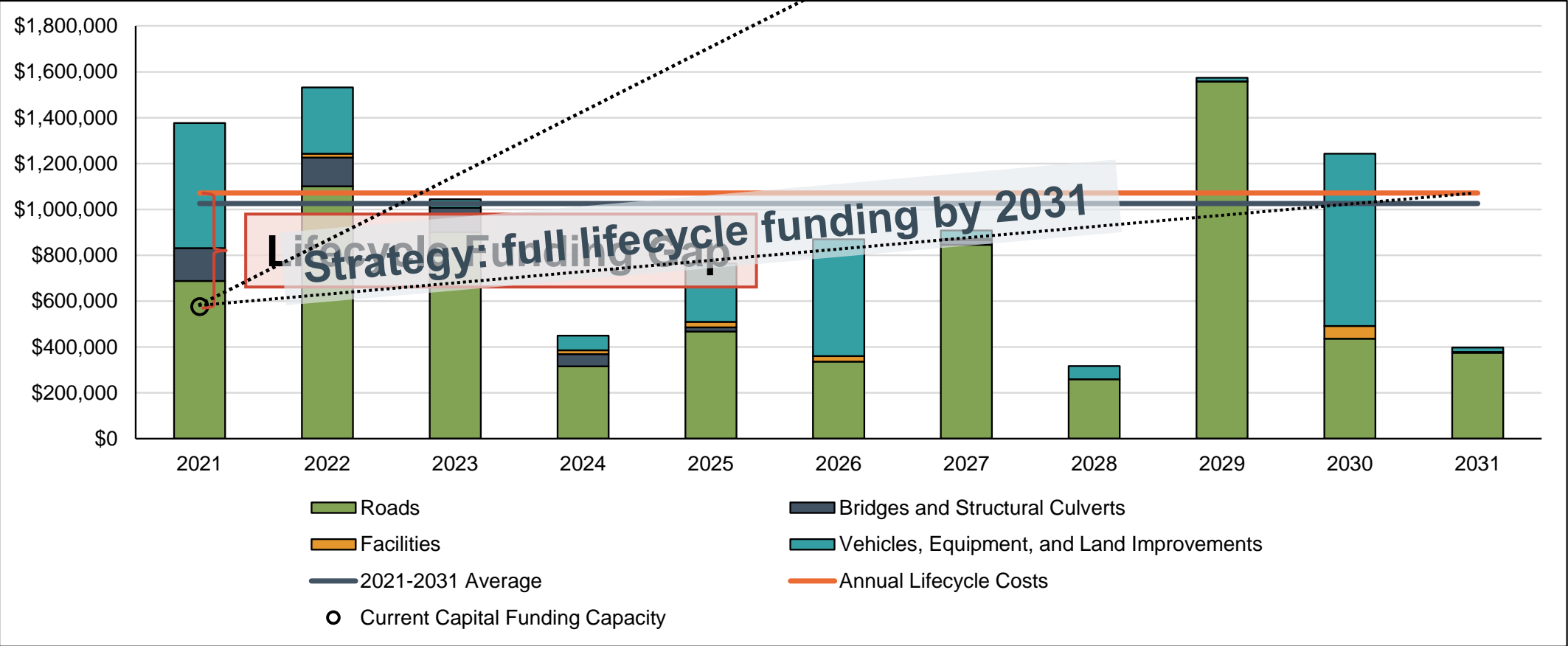
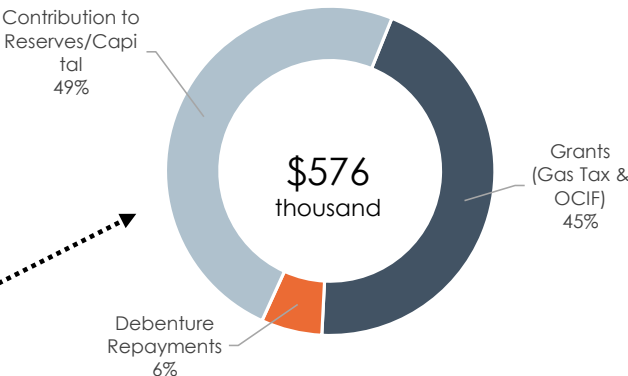
Financial Strategy

Capital Forecast

(Uninflated \$)

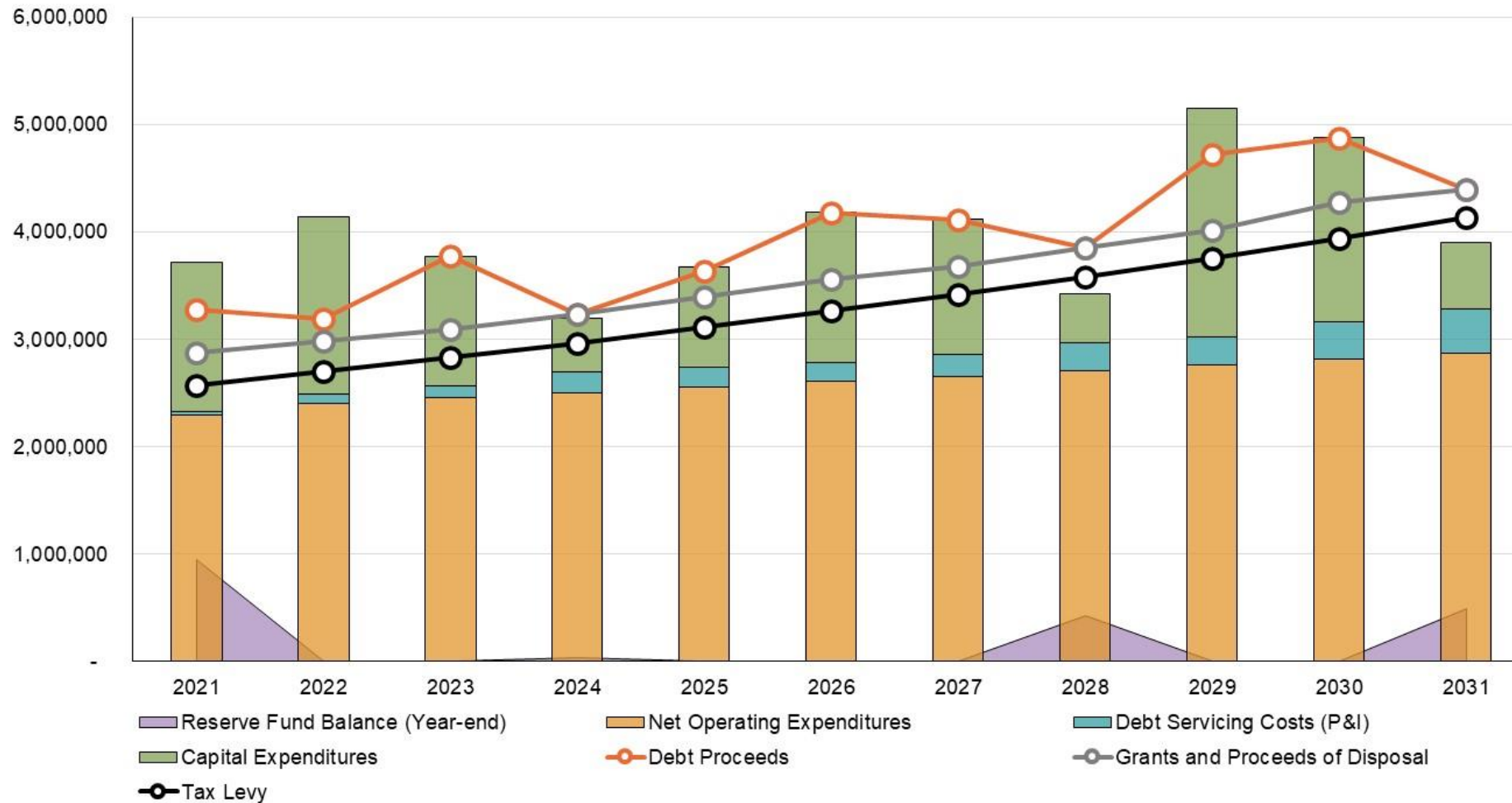


Capital Funding Capacity



Financial Forecast

(Inflated \$)

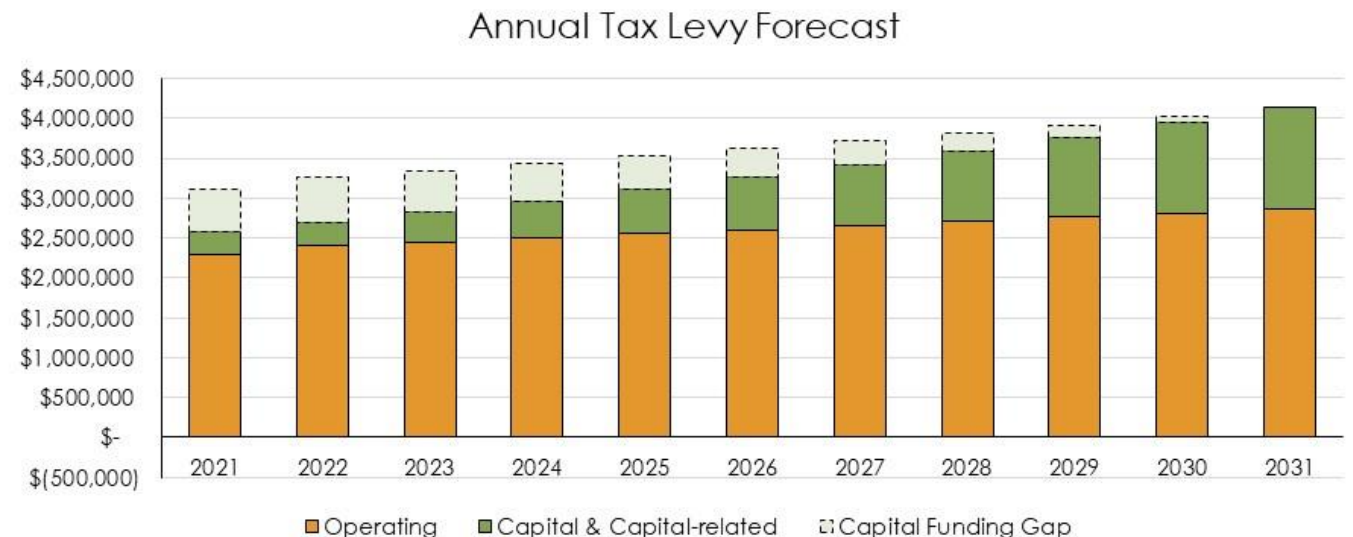


Note: The lines representing "Billing Revenues", "Grants", and "Debt Proceeds" are stacked

Financial Strategy Impacts



- Financial Strategy designed to close the annual capital funding gap (relative to full lifecycle funding) by 2031
- Tax levy forecast includes adjustments for operating and capital cost inflation
- Individual tax bills estimated to increase by 4.3% annually from 2022 to 2031.
 - Includes 0.5% real annual growth in the assessment base

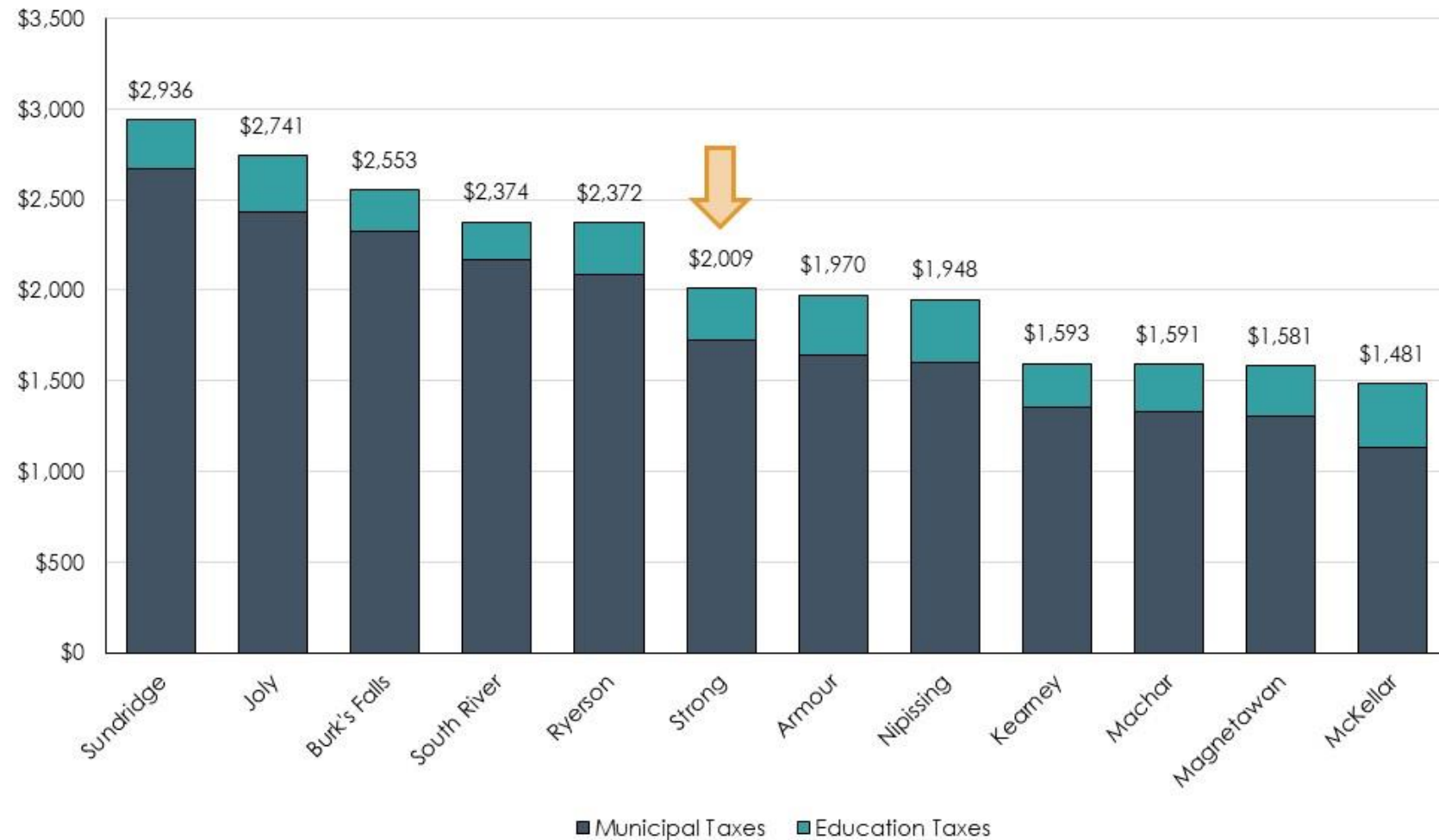


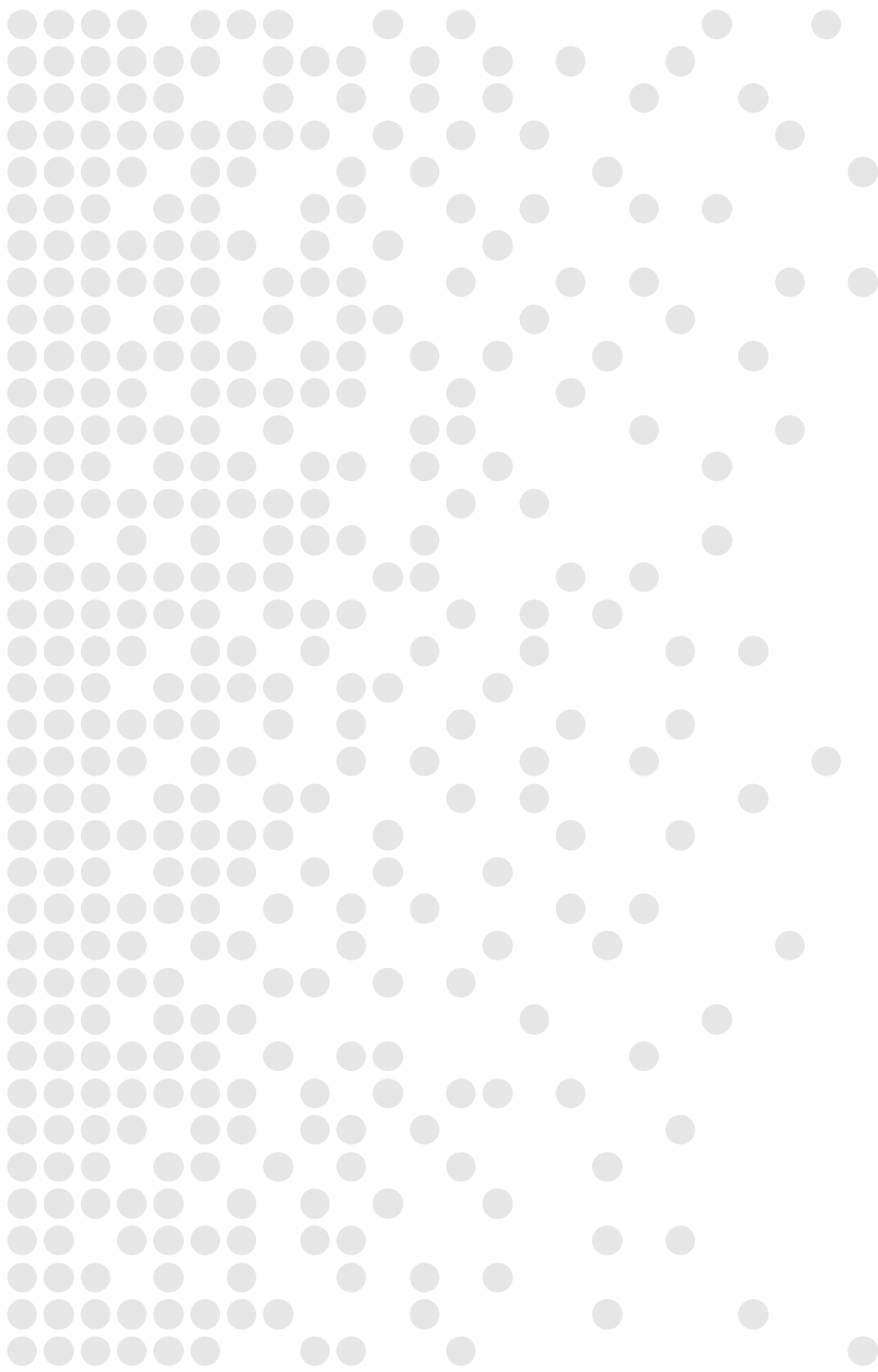
Financial Strategy Impacts

Additional Context



Annual Tax Bill for an Average Single Family Detached Dwelling (2020)





Next Steps

Next Steps



- Council approval of AMP
- Annual review of asset management planning progress
- Update of AMP in 5 years