



TOWN OF AURORA NATURAL CAPITAL ASSET MANAGEMENT PLAN

Environmental Advisory Committee

June 17, 2024



AGENDA

- **Project Overview**
- **Findings**
 - Inventory and Condition
 - Levels of Service
 - Asset Lifecycle Management Plan
 - Financial Strategy
 - AM Improvement Recommendations
- **Questions/Discussion?**

What is Asset Management?

The coordinated activity of an organization to realize value from assets

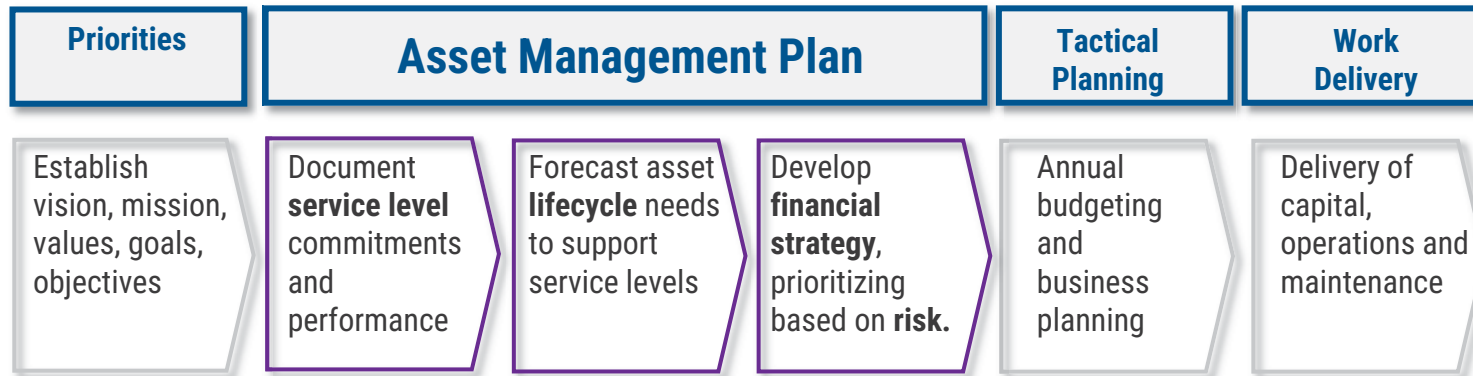
This includes:

- Delivering the **service levels** customers need and regulators require
- While **minimizing total costs** of asset ownership
- At an **acceptable level of risk**
- Within an environment of **limited resources**

Creating sustained value



What is an Asset Management Plan?

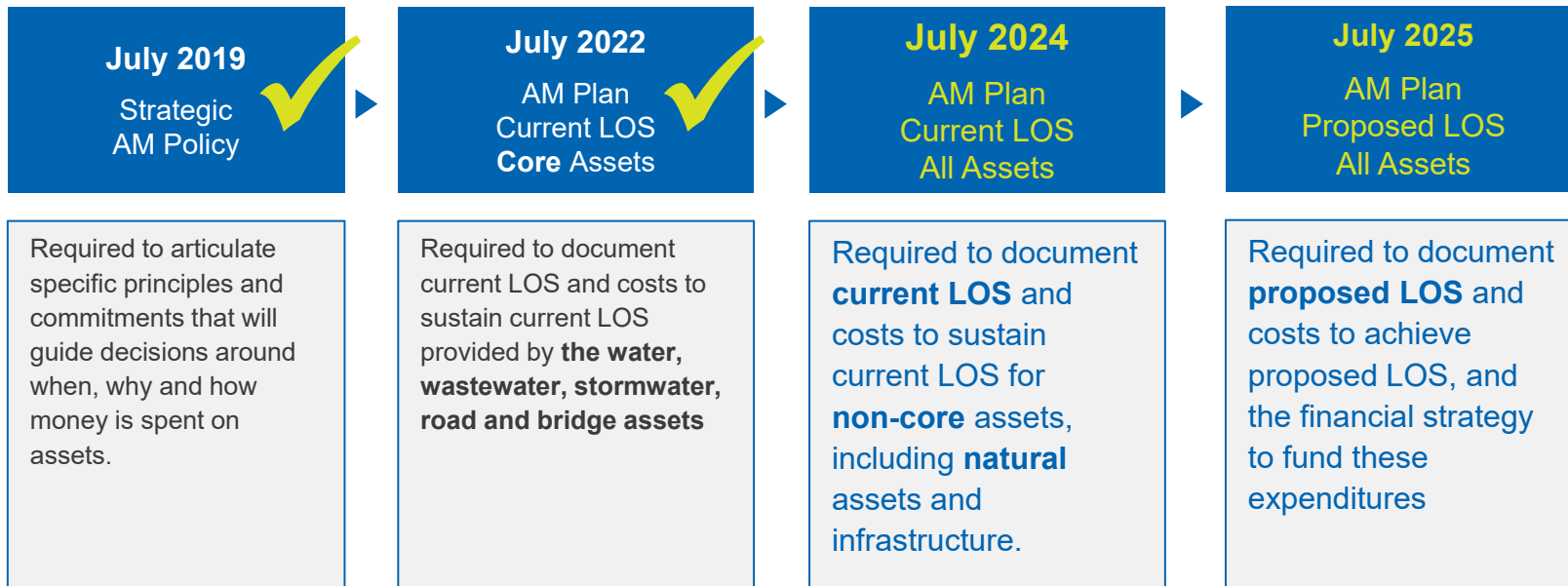


The AM Plan consolidates infrastructure-related needs identified throughout the organization, in

- Master plans
- Condition assessments
- Business cases
- Strategic plans, etc.

Infrastructure needs can then be prioritized organization-wide.

O.Reg. 588/17 for Asset Management Planning



Progress implementing AM Plans to be reported annually.
 AM Plans to be updated at least every 5 years.

NCAMP Asset Categories

Natural Area Assets

- Forests & Open spaces
- Wetlands
- Watercourses
- Waterbodies

Natural Enhanced Assets

- Urban Trees
- Urban Parks
- Community Gardens
- Pet Cemetery

NCAMP excludes:

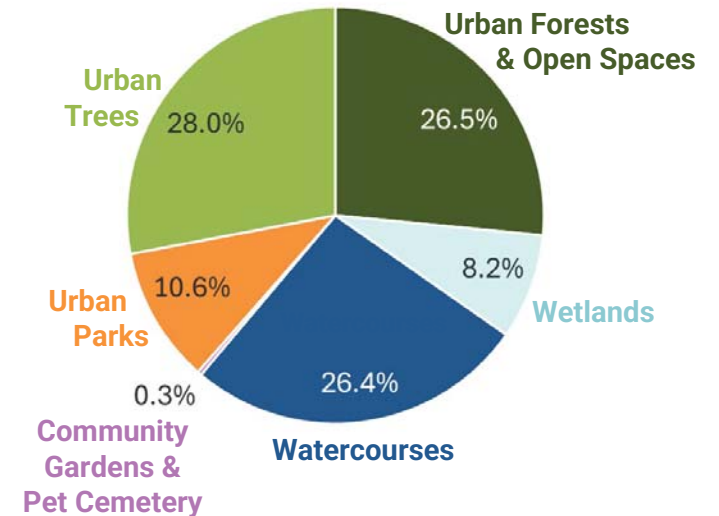
- Stormwater ponds and surrounding areas
- Other stormwater assets
- Trails

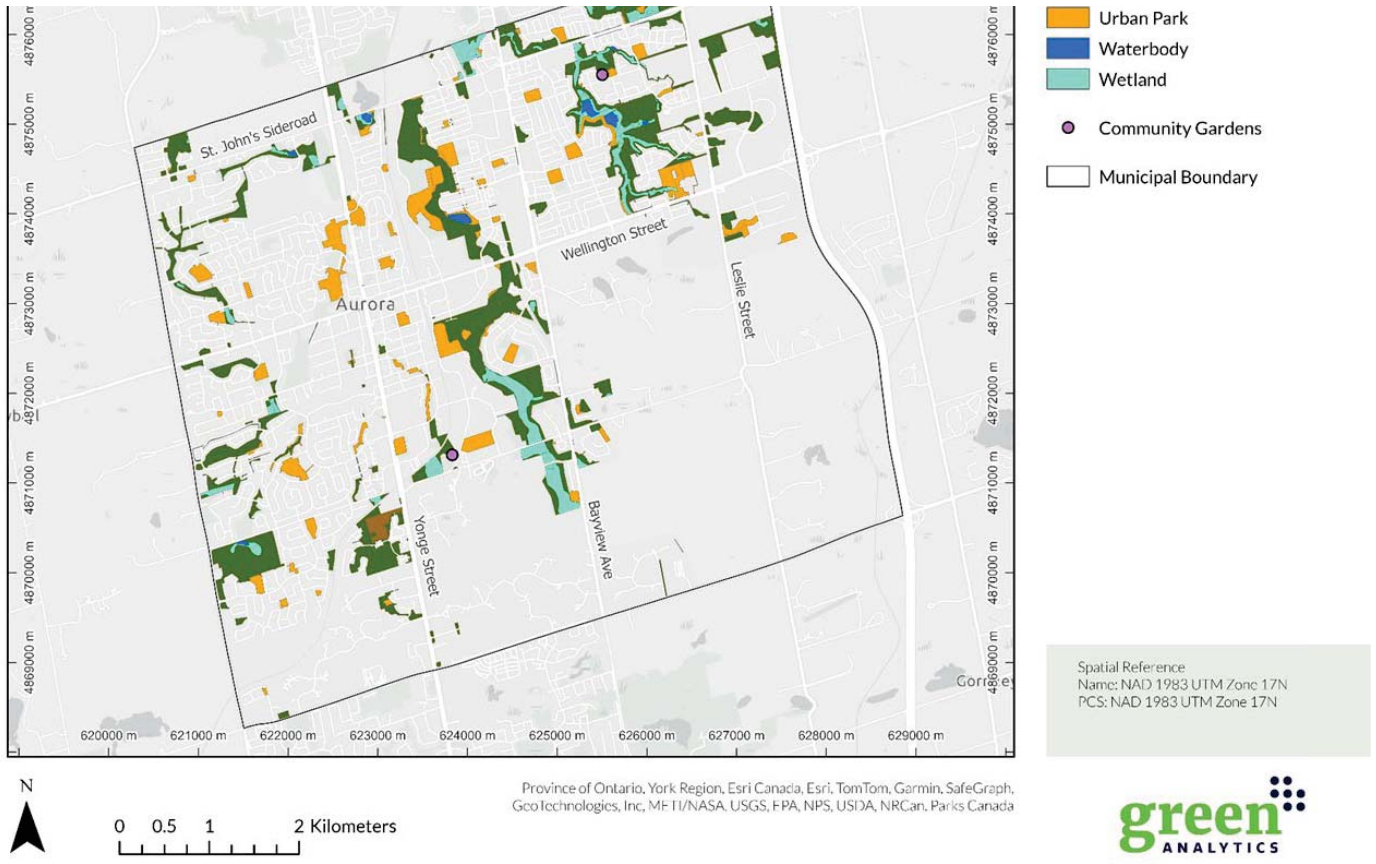
See Corporate AM Plan.

Inventory of Natural Assets

Asset Category	Asset Class	Quantity	Unit Cost	Replacement Value (2024\$M)
Natural Area Assets	Forest and open space	350.6 hectares	Meadow \$198k / ha Thicket \$189k / ha Forest \$174k / ha	\$ 63.0
	Waterbody	6.3 hectares	No readily available cost	--
	Watercourse	36.9 km	\$1.7M / km	\$ 62.8
	Wetland	78.3 hectares	Deciduous Swamp \$268k / ha Mixed Swamp \$268k / ha Thicket Swamp \$245k / ha Marsh \$224k / ha	\$ 19.4
Natural Enhanced Assets	Community Gardens	2 locations with 52 plots each	Near Alliance Park \$150k Near Hartwell Way \$300k	\$ 0.5
	Pet Cemetery	6.4 hectares	Whole property \$300k	\$ 0.3
	Urban Parks	125.4 hectares	Grassy areas \$200k / ha	\$ 25.1
	Urban Trees	26,435 street and park trees	\$600 per new tree needed to replace existing tree (dbh existing / 5cm) + \$16.50 per cm dbh existing tree (removal and stumping) e.g. \$2,700 to replace 20cm dbh tree = \$2,400 for 4 new trees + \$330 for removal and stumping	\$ 66.4
TOTAL				\$ 237.5

\$ 237.5 million





State of Infrastructure

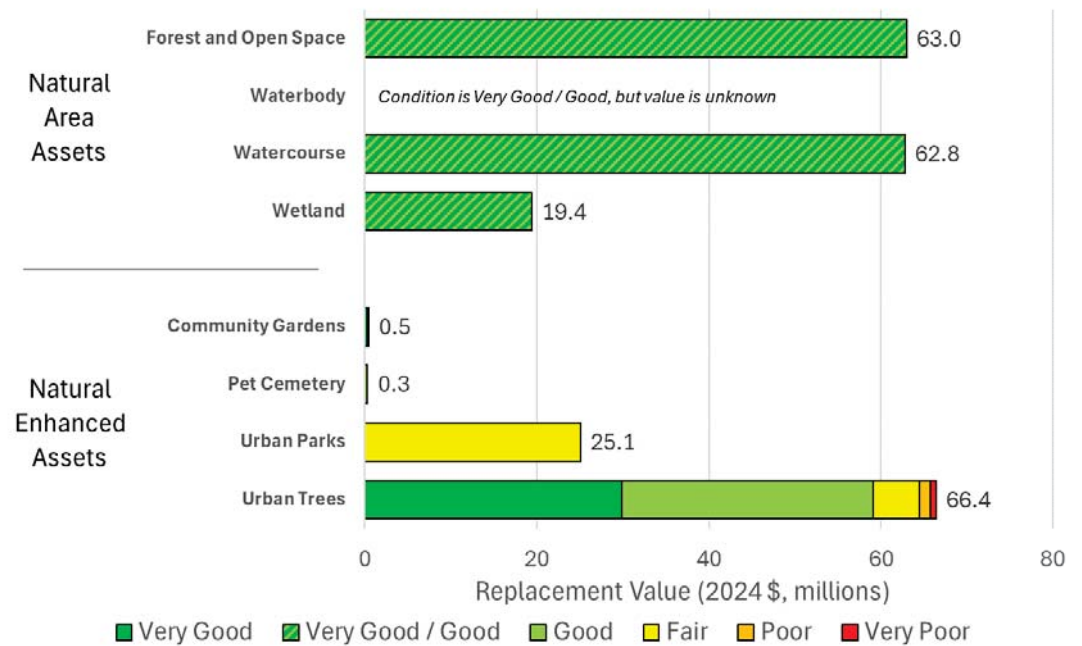
86% Very Good or Good

13% Fair

1% Poor

0.3% Very Poor

Condition of Natural Assets



Levels of Service

Capacity and Access to Natural and Enhanced Areas



• % residential homes within 500m of natural or enhanced areas



• Natural area assets per 1000 people



• Enhanced area assets per 1000 people



• km of trails through natural and enhanced areas per 1000 people



• Community Garden locations per 1000 people

Current Performance

99.35%

6.6 hectares

2.0 hectares

0.62 km

0.030

Anticipated Trend to 2049 (due to population growth)



increasing



5.2 hectares



1.6 hectares



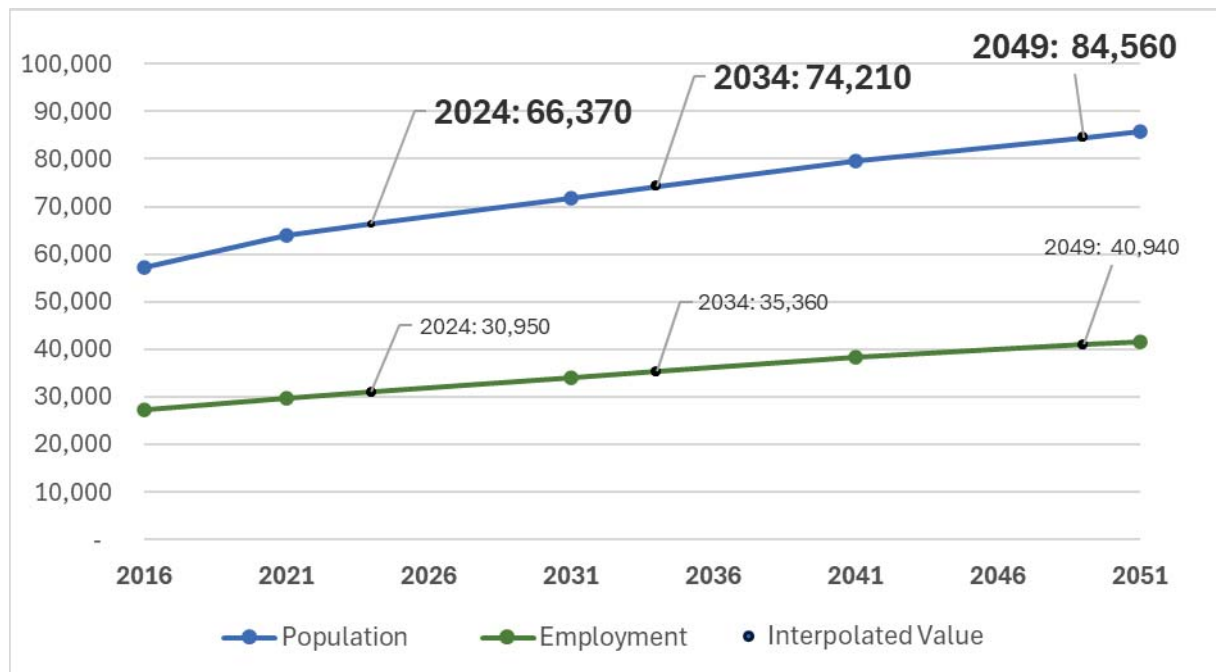
0.48 km



0.024

Levels of Service

Projected Population Growth

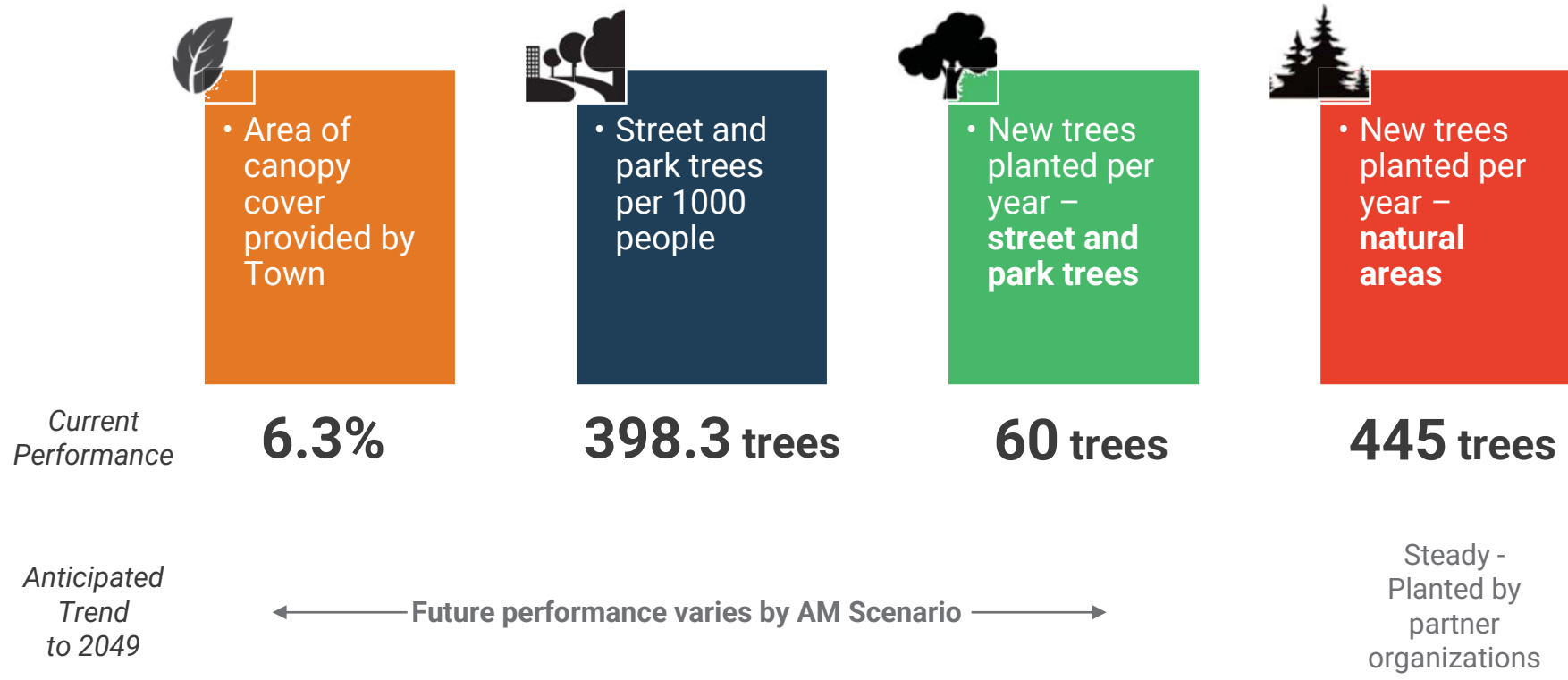


Population to grow **27.4%** over next 25 years.

Source: 2022 York Region Official Plan

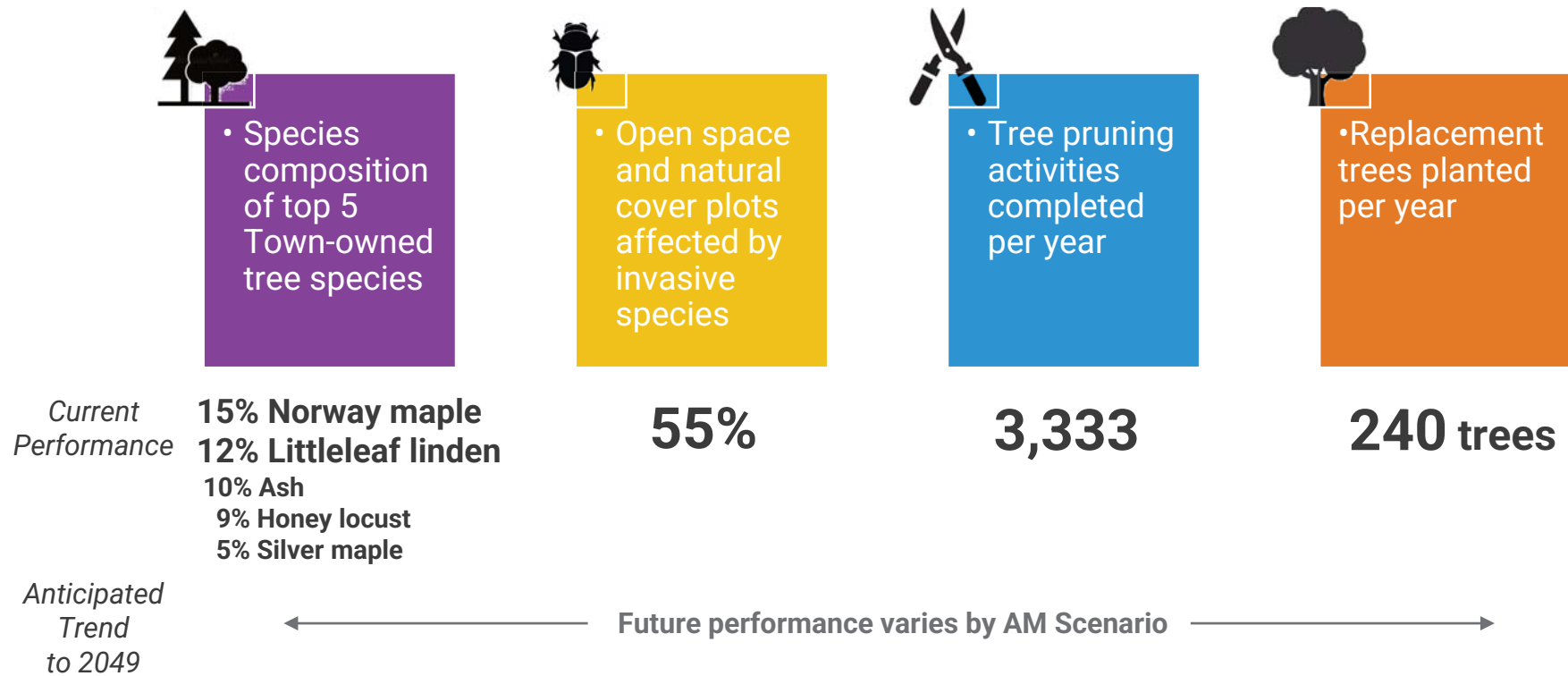
Levels of Service

Quantity of Trees



Levels of Service

Maintenance of Trees and Natural Areas



Asset Management Strategy – Risk Ratings

Type of Threat or Hazard	Threat or Hazard	Natural Area Assets (Forests, open spaces, waterbodies, wetlands, watercourses)	Enhanced Natural Assets (Urban parks, urban trees, community gardens, Pet Cemetery)
Environmental	Invasive species, pests and disease	High-medium	n/a
	Wildlife Impacts	High-medium	n/a
Climate	Extreme heat and drought	Low-medium	Low-medium
	Extreme rainfall and erosion	Low-medium	Low-medium
	Extreme storms (wind and lightning)	Low-medium	Low-medium
Human-Induced	Overuse and misuse	Low	Low-medium
	Unauthorized edge encroachment or disturbances	Low	Low
	Contamination (e.g. road salting and other spills)	Low	Low

Asset Management Strategy – Risk Management

Risk Exposure Matrix - Urban Trees

Likelihood of Failure	5	\$0.03	\$0.10	\$0.12	\$0.03	\$0.00
	4	\$0.02	\$0.19	\$0.33	\$0.18	\$0.04
	3	\$0.11	\$0.59	\$2.04	\$1.59	\$0.14
	2	\$0.45	\$4.05	\$11.18	\$5.74	\$0.43
	1	\$0.59	\$5.37	\$8.42	\$2.41	\$0.07
		1	2	3	4	5
		Consequence of Failure				

60 urban trees are exposing Town to Very High risk

Asset Management Strategies



Scenario A

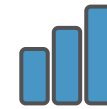
Status Quo

*Current state
activities and
costs*



Scenario B

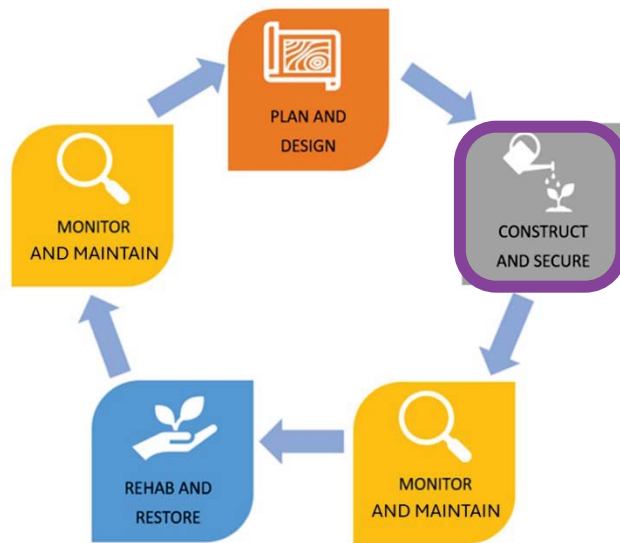
Status Quo with
Moderate
Rehab, Maintenance
and Monitoring



Scenario C

Status Quo with
High
Rehab, Maintenance
and Monitoring

Scenario A – Status Quo Activities



Construct & Secure

- Plant 60 new urban trees/year
- Plant 445 new trees in natural areas (with partner organizations)
- Town may not be able to secure additional natural asset lands

Scenario A – Status Quo Activities



Monitor and Maintain

- Continue maintaining urban trees, urban parks and trail-side vegetation according to current maintenance standards
- Does not include condition assessment for natural areas

Scenario A – Status Quo Activities



Rehab and Restore

- Replace 240 urban trees / year (82% of forecast need)
- Invasive species control: 2% of natural areas over 25 years
- Targeted planting and seeding: 1% of natural areas over 25 years
- Complete the remaining stream rehabilitation projects

Scenario A – Status Quo Activities



Plan and Design

Continue updating (every 10 years):

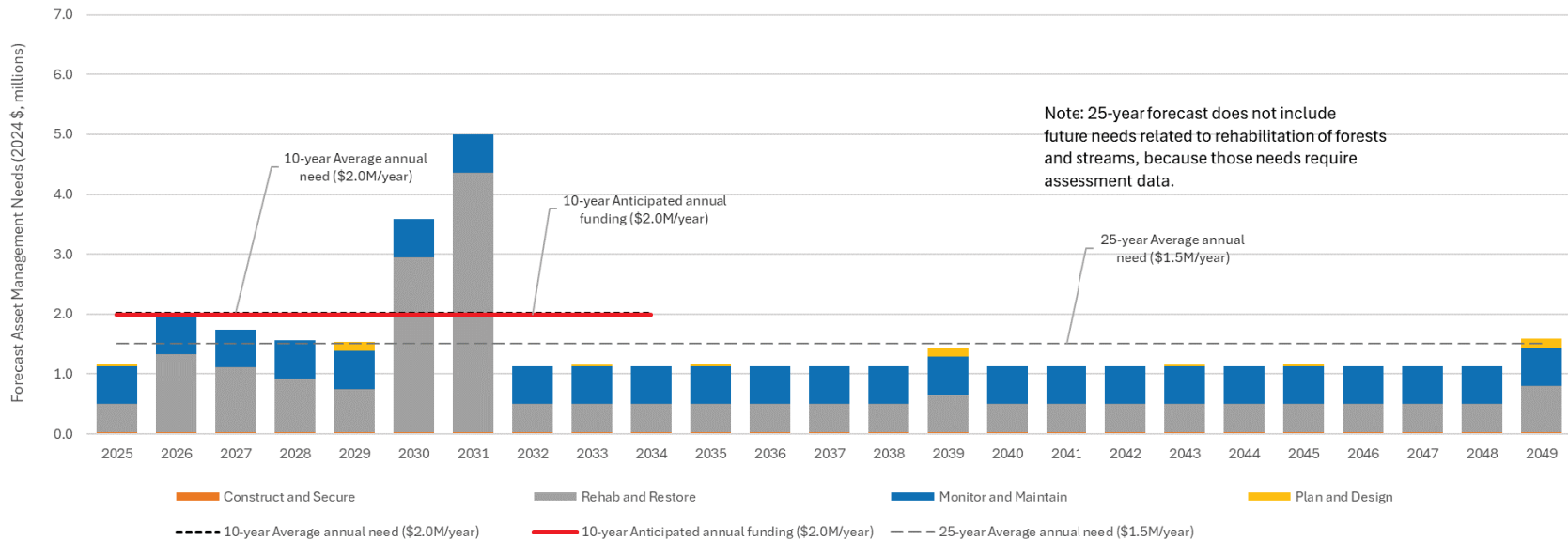
- Stream Management Master Plan
- Urban Forest Study
- Tree Inventory

Scenario Comparison – AM Activities Completed Over 25 Years

Asset Management Activity	Scenario A	Scenario B	Scenario C
Construct & Secure			
New urban trees	1500 trees	2000 trees	4000 trees
New trees in forests and open spaces	11,125 trees (through partnerships)		
Monitor & Maintain			
5-year stream inspections	0	2	2
Natural area condition assessment	0	All areas completed in first 6 years, then 10-year cycle	All areas completed in first 5 years, then 10-year cycle
Urban tree maintenance	In accordance with current standards		
Urban park maintenance	In accordance with current standards		
Rehab & Restore			
Urban trees replaced	6,000 (82% of forecast need)	7,000 (95% of forecast need)	7,375 (100% of forecast need)
Invasive species control	2% of natural areas	13% of natural areas	45% of natural areas
Targeted seeding and planting	1% of natural areas	2.4% of natural areas	4.8% of natural areas
Stream rehab projects completed	In accordance with Stream Management Master Plan		
Plan & Design			
Stream Management Master Plan updates (including 10-year inspections)	In accordance with 10-year update frequency		
Urban Forest Study updates	In accordance with 10-year update frequency		
Tree inventory updates	In accordance with 10-year update frequency		

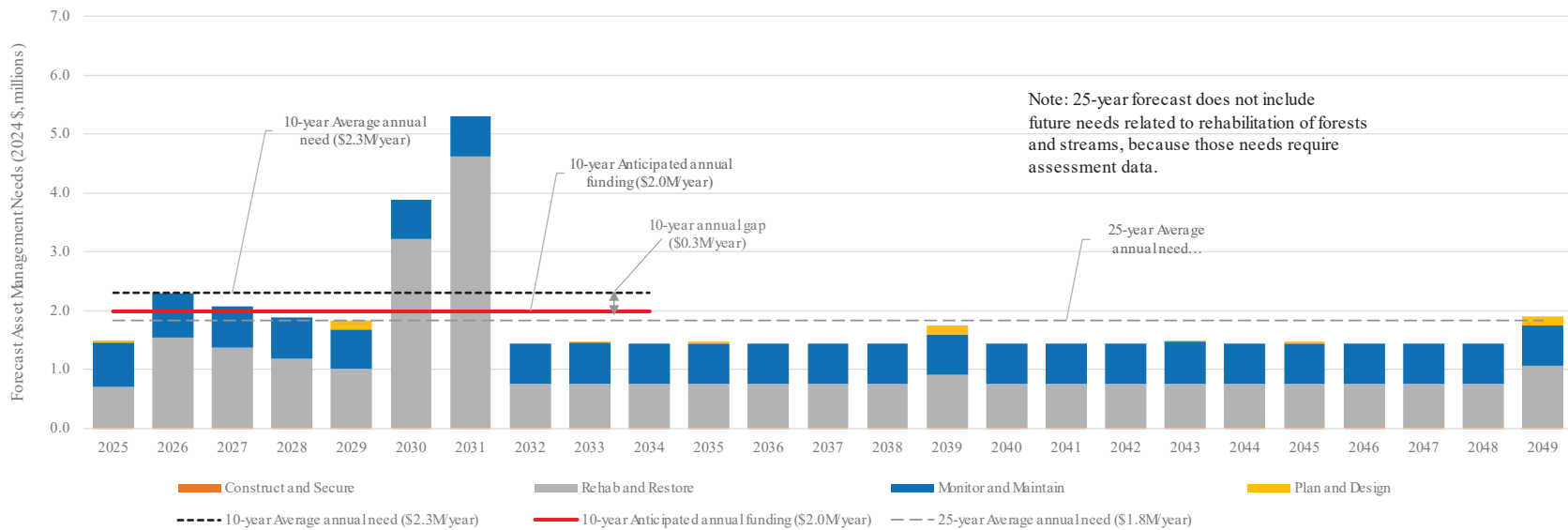
Scenario A: Status Quo – Cost

	Over 10 Years (in 2024\$, millions)	Over 25 Years
Total Cost	\$ 20.0	\$ 37.9
Average Annual Cost	\$ 2.0	\$1.5
Anticipated Annual Funding	\$ 2.0	\$1.5
Anticipated Gap	--	--



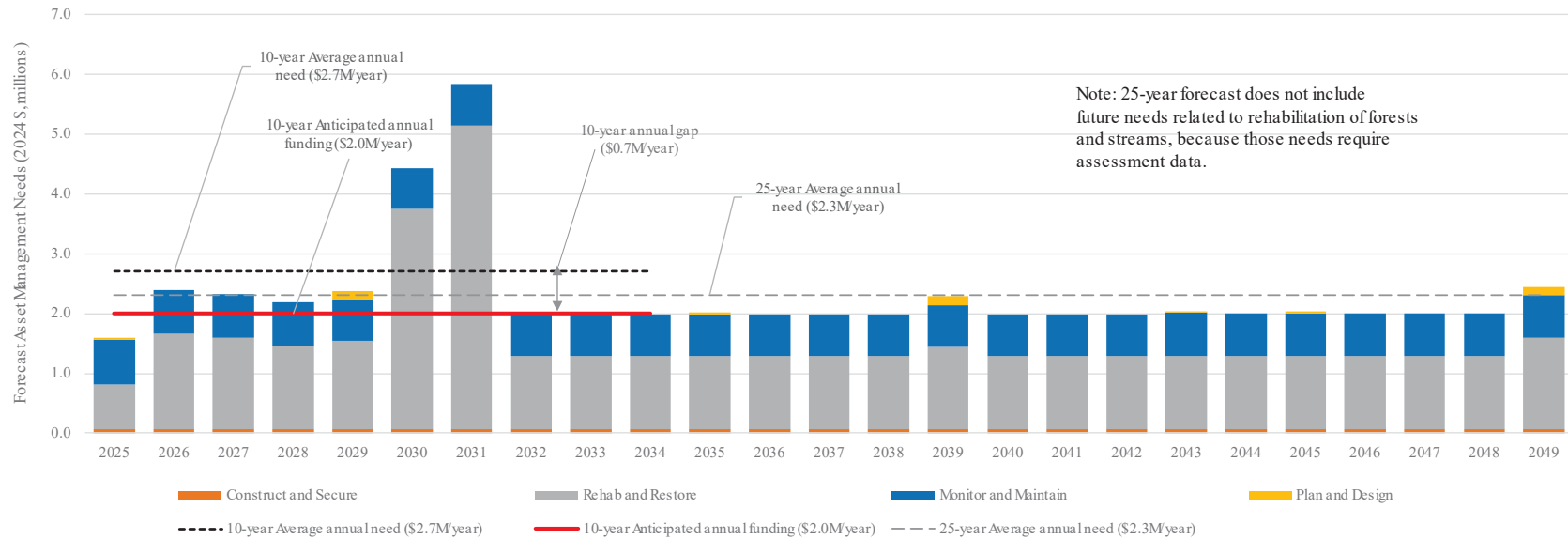
Scenario B – Cost

	Over 10 Years (in 2024\$, millions)	Over 25 Years
Total Cost	\$ 23.1	\$ 45.7
Average Annual Cost	\$ 2.3	\$ 1.8
Anticipated Annual Funding	\$ 2.0	\$ 1.5
Anticipated Gap	\$ 0.3	\$ 0.3



Scenario C – Cost

	Over 10 Years (in 2024\$, millions)	Over 25 Years
Total Cost	\$ 27.1	\$ 57.9
Average Annual Cost	\$ 2.7	\$ 2.3
Anticipated Annual Funding	\$ 2.0	\$ 1.5
Anticipated Gap	\$ 0.7	\$ 0.8



Scenario Comparison – Levels of Service

Quantity of Trees



- Area of canopy cover provided by Town



- Street and park trees per 1000 people



- New trees planted per year – street and park trees



- New trees planted per year – natural areas

Current Performance

6.3%

398.3 trees

60 trees

445 trees

In 2049: Scenario A

Canopy from:
1,500 trees

345.3 trees

60 trees

Steady -
Planted by
partner
organizations

Scenario B

2,000 trees

355.9 trees

80 trees

Scenario C

4,000 trees

398.5 trees

160 trees

Scenario Comparison – Levels of Service

Maintenance of Trees and Natural Areas



- Species composition of top 5 Town-owned tree species



- Open space and natural cover plots affected by invasive species



- Tree pruning activities completed per year



- Replacement trees planted per year

Current Performance

Top five species each make up 5–15% of inventory

55%

3,333

240 trees

In 2049:
Scenario A
Scenario B
Scenario C

Slow diversification

2% natural areas treated

Slow-mod diversification

13% natural areas treated

Moderate diversification

45% natural areas treated

Per maintenance standard

240 (82% of forecast need)

280 (95% of forecast need)

294 (100% of forecast need)

Scenarios B & C include assessments to monitor for threats and hazards, and actions to increase resilience to threats and hazards.

Type of Threat or Hazard	Threat or Hazard	Natural Area Assets (Forests, open spaces, waterbodies, wetlands, watercourses)	Enhanced Natural Assets (Urban parks, urban trees, community gardens, Pet Cemetery)
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Recommended Strategy

Scenario B

	Over 10 Years (in 2024\$, millions)	Over 25 Years
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Average Annual Cost	\$ 2.3	\$ 1.8
Anticipated Annual Funding	\$ 2.0	\$ 1.5
Anticipated Gap	\$ 0.3	\$ 0.3

Allows Town to:

- Begin condition assessment program for natural assets
- Increase invasive species control and targeted planting (to increase resilience to environmental and climate hazards)
- Increase urban tree replacements (address backlog of 666 trees)
- Increase planting of new urban trees toward
 - Achieving tree canopy target
 - Maintaining ratio of trees / 1000 people

Recommended Strategy – Funding

Scenario B

	Over 10 Years (in 2024\$, millions)	Over 25 Years
Total Cost	\$ 23.1	\$ 45.7
Average Annual Cost	\$ 2.3	\$ 1.8
Anticipated Annual Funding	\$ 2.0	\$ 1.5
Anticipated Gap	\$ 0.3	\$ 0.3

To close funding gap:

- Seek additional revenues through taxation or grants
- Re-allocate funds from other programs
(may result in reduced levels of service in other programs).

Also, continue partnerships with external organizations for

- Access to natural lands (with maintenance agreements)
- Tree planting programs
- Invasive species control (volunteers)

AM Plan Improvements

Levels of Service

1. Monitor LOS performance and costs to enable forecasting of cost impacts of LOS adjustments.
2. Translate Town-wide tree targets into targets for Town-owned assets, e.g. tree canopy and diversity targets for Town-owned trees.
3. Consider incorporating carbon sequestration impact of natural assets in Town's GHG emissions plans, such as the Energy Conservation and Demand Management Plan and the Community Energy Plan.

AM Process, Technology and Data

4. Establish land type naming standards and implement in GIS, so that natural asset inventory will be consistent with other studies (e.g. Parks and Recreation Master Plan)
5. Continue initiative to implement maintenance management system. Use the data to better understand maintenance costs of natural assets.
6. Consider building on the initial risk assessment for natural assets to further inform and prioritize risk mitigation actions for natural assets.

Discussion

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