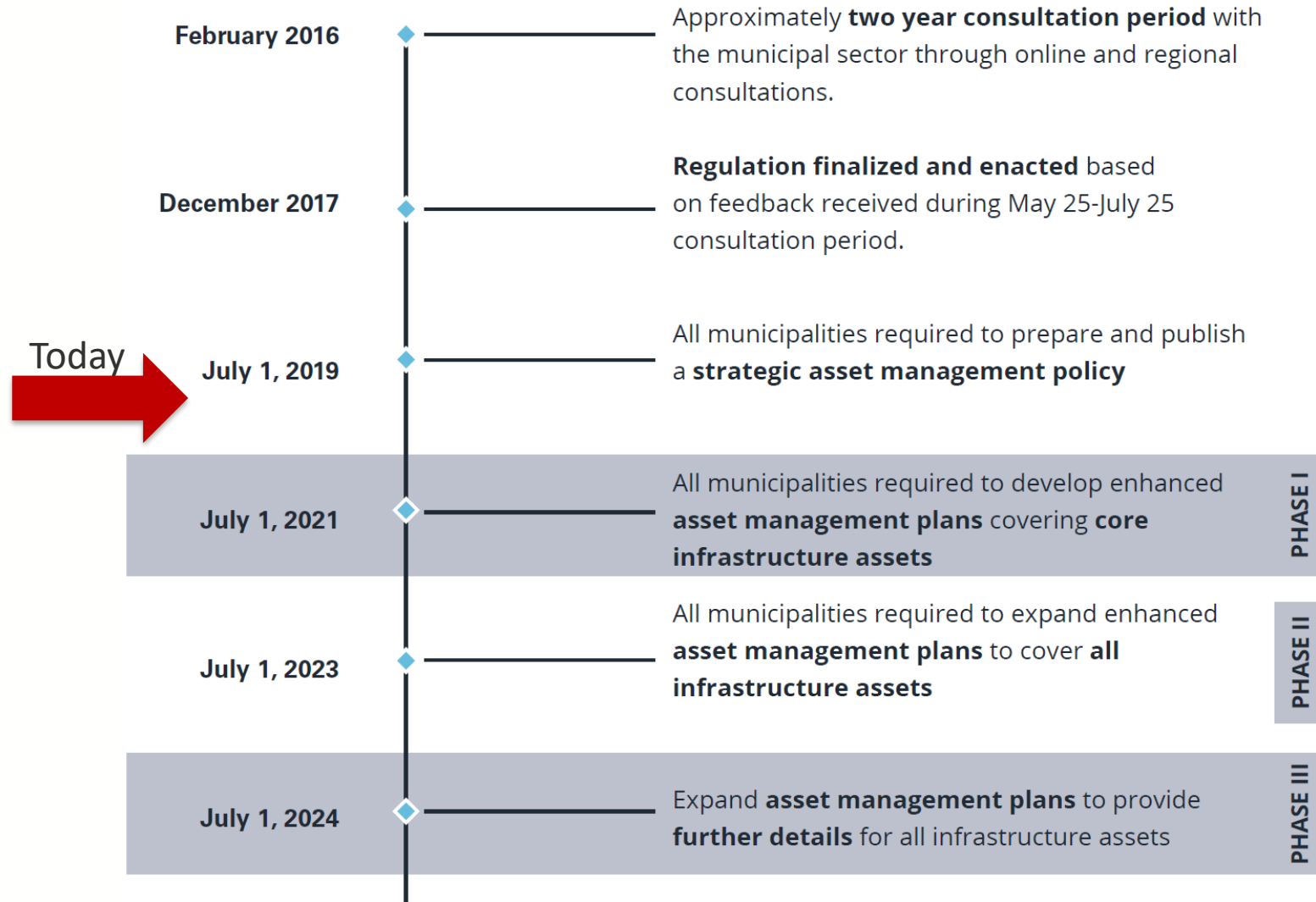# Building on the evolutionary practice of asset management

Sept 18, 2019

Agenda

- Context
  - O.Reg 588/17 where we should be and what's next

- Building on the evolutionary practice of asset management

- MFOA and partner resources

O. Reg. 588/17

February 2016 — Approximately **two year consultation period** with the municipal sector through online and regional consultations.

December 2017 — **Regulation finalized and enacted** based on feedback received during May 25-July 25 consultation period.

Today →

July 1, 2019 — All municipalities required to prepare and publish a **strategic asset management policy**

July 1, 2021 — All municipalities required to develop enhanced **asset management plans** covering **core infrastructure assets**

PHASE I

July 1, 2023 — All municipalities required to expand enhanced **asset management plans** to cover **all infrastructure assets**

PHASE II

July 1, 2024 — Expand **asset management plans** to provide **further details** for all infrastructure assets

PHASE III

SAMP Components

Guiding Principles

Principles guide the analysis completed to inform decisions and the management process followed to make decisions.

Governance (Roles & Responsibilities)

Responsibility identifies which executive lead is responsible for asset management planning and how Council will be involved.

Accountability sets the commitment to annual updates by Council on on-going efforts to implement the asset management plan and strategy options to address factors affecting the Municipality's policy commitments.

Strategic Alignment

Strategic alignment in the context of asset management is about integrating diverse municipal initiatives into coherent plans and decisions.
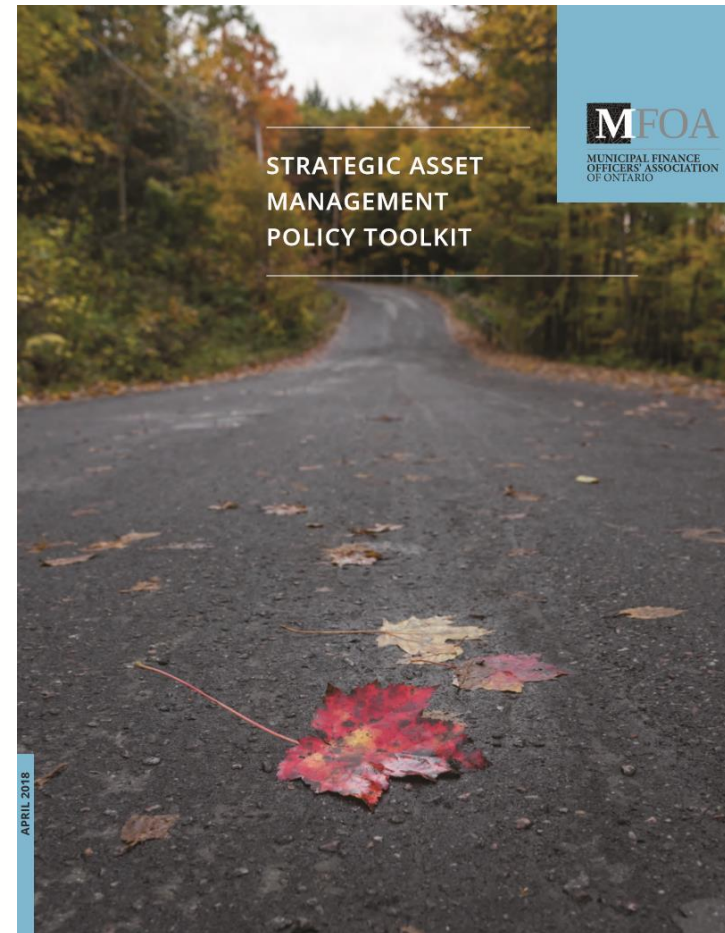
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SAMP Toolkit

> The Toolkit is broken into three sections, and is designed to give you the basic knowledge required to **plan**, **develop**, and **implement** a regulation compliant policy and help you navigate the social inputs that will bolster its positive impact on the municipality.

http://mfoa.on.ca/MFOA/Main/MFOA_Policy_Projects/Strategic_Asset_Management_Policy_Toolkit.aspx

STRATEGIC ASSET MANAGEMENT POLICY TOOLKIT

MFOA
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF ONTARIO

APRIL 2018

MFOA
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF ONTARIO

Requirements under O/Reg. 588/17

- Establishing a process by which AMP are considered in budgeting

- Expanding the use of levels of service and lifecycle management as **drivers for investment** and **a basis for decision making**

- Engaging with stakeholders

- Monitoring and reporting progress on the AMP through annual updates by Council

- Reviewing the SAMP, if necessary

- Updating the asset management plan on a five-year cycle

Phase 2 – AM for Core Assets

Core Assets – AMP plus Current Levels of Service (LOS)

- Required - July 1, 2021

- Core Assets include Roads, Bridges and Culverts, Water, Wastewater and Stormwater

- Level of Service (LoS)

- Performance

- Asset category details

- Lifecycle activities

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Phase II Connection to the SAMP

Explicit Connections

Climate Change

In the SAMP municipalities defined their commitment to consider "the actions that may be required to address the vulnerabilities that may be caused by climate change to the municipality's infrastructure assets, in respect of such matters as:

A. operations, such as increased maintenance schedules
B. levels of service, and
C. lifecycle management

Implicit Connections

Role of Council

- Did your SAMP articulate Council's role in level of service definitions?
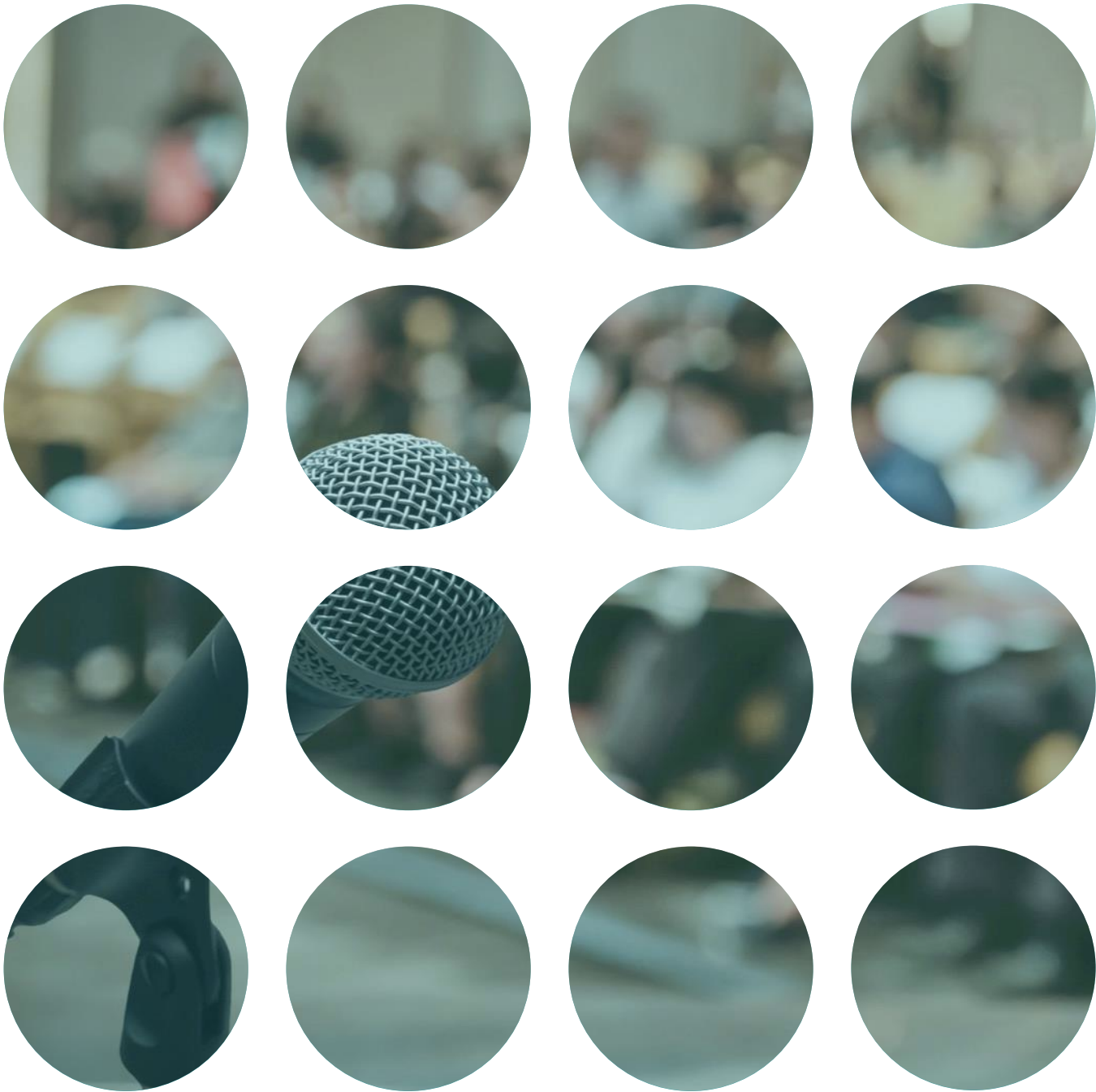- Lifecycle management analysis?

Role of Public Consultation

- Did your SAMP commit to consulting the public on Customer LOS definitions?

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Building on the Evolutionary Practice of Asset Management Planning

AM Workshop – 2019 MFOA Conference
September 18, 2019

Andrew Grunda
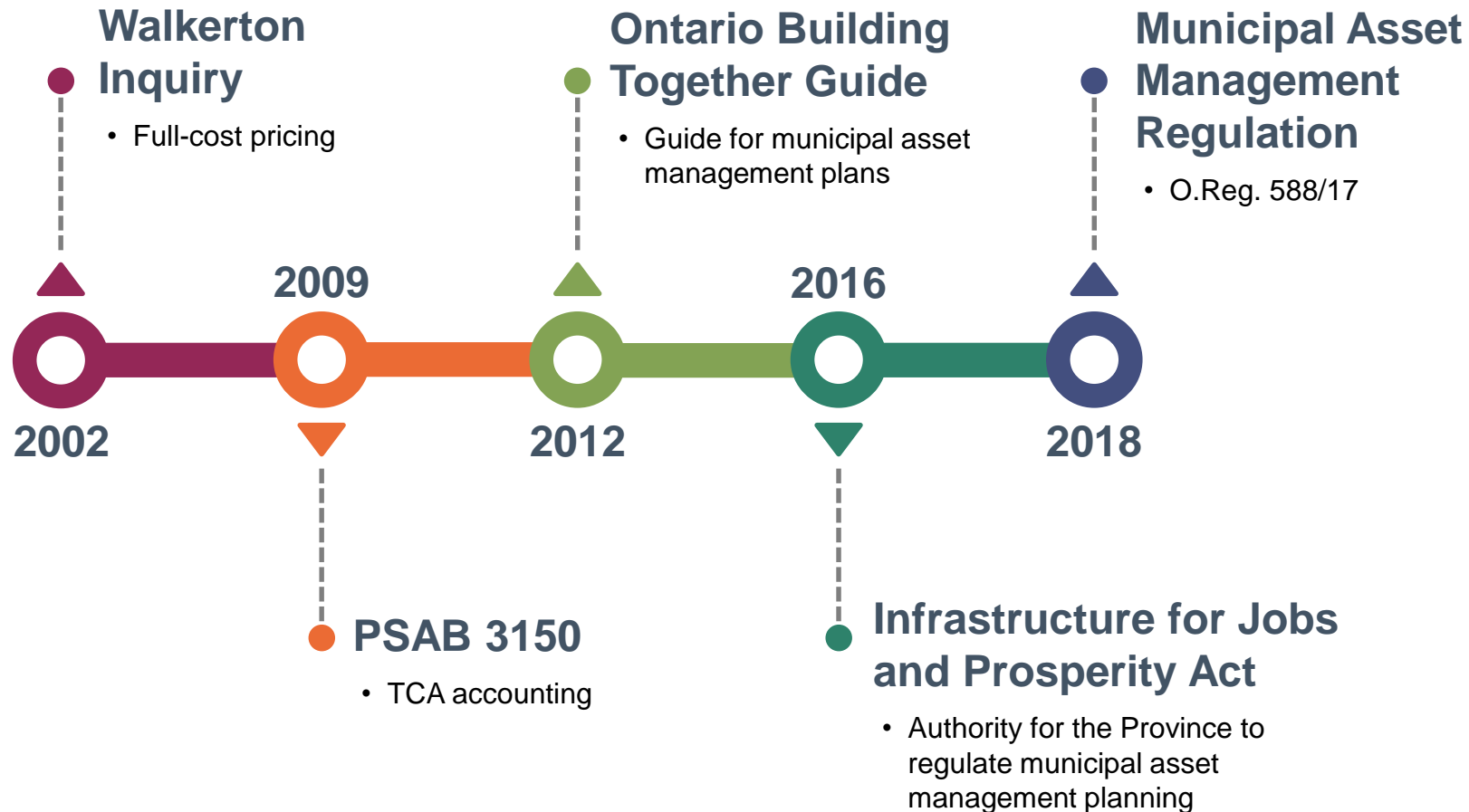PRINCIPAL

Peter Simcisko
MANAGER

Session Abstract

Building on the evolutionary practice of asset management planning within municipalities, this workshop will focus on **approaches used to better define levels of service**; **involve decision makers in the process** and **integrate other elements of asset management plans**. It will draw on **experiences in municipalities**, providing **practical resources** for attendees to assist them in the development of their plans.

Evolution of Asset Management
Watson Experience in the Ontario Municipal Context

Walkerton Inquiry
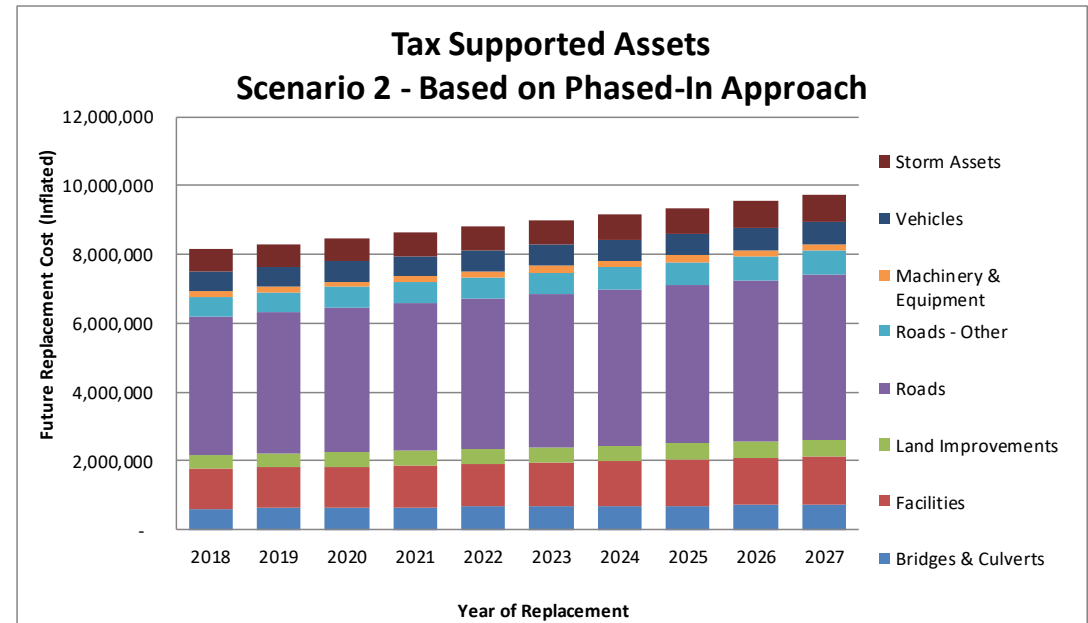- Full-cost pricing

Ontario Building Together Guide
- Guide for municipal asset management plans

Municipal Asset Management Regulation
- O.Reg. 588/17

2009

2016

2002

2012

2018

PSAB 3150
- TCA accounting

Infrastructure for Jobs and Prosperity Act
- Authority for the Province to regulate municipal asset management planning
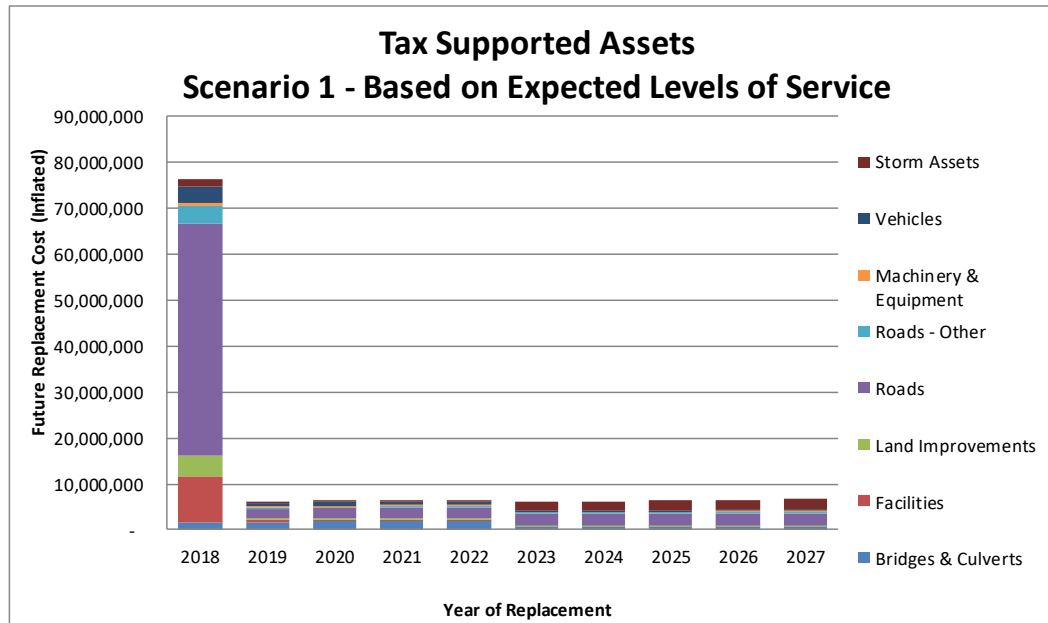
Generation 1 Asset Management Plans

- Based on Province's Building Together Guide, largely in response to grant funding requirements

- **State of Local Infrastructure**

  - Included asset inventory but asset condition was not well captured

- **Level of Service**

  - Largely focused on community LoS. Technical LoS were less developed.

- **Asset Management Strategy**

  - Based on accounting conventions (straight-line amortization). Lack of linkage to LoS outcomes.

Generation 1 Asset Management Plans

- ## **Financial Strategy**
  - Identified program funding requirements

Tax Supported Assets
Scenario 1 - Based on Expected Levels of Service

Tax Supported Assets
Scenario 2 - Based on Phased-In Approach

Generation 1 Asset Management Plans

- Positive movement for municipalities

  - Basic understanding of assets owned and high-level understanding of funding requirements

- Limited buy-in from stakeholders

  - Council – often felt there was no need to increase funding or could "phase-in" funding without consequence

  - Staff (engineering) – plan didn't reflect their LoS expectations from Council and the public

- Plans weren't well integrated with the budget process

Client Needs
What we have heard

- Plan that is supported and better integrated with the budget process

  - Need to better communicate the importance to stakeholders

  - Levels of service need further development - we have heard that it has been a challenge picturing how this actually integrates with the whole AM process.

  - How do we define, quantify, project, optimize, and fund LoS

- Our focus is on walking through a process of how this can be achieved

  - Two detailed examples based on our experience with municipal clients

  - What can be achieved with or without specialized tools and services
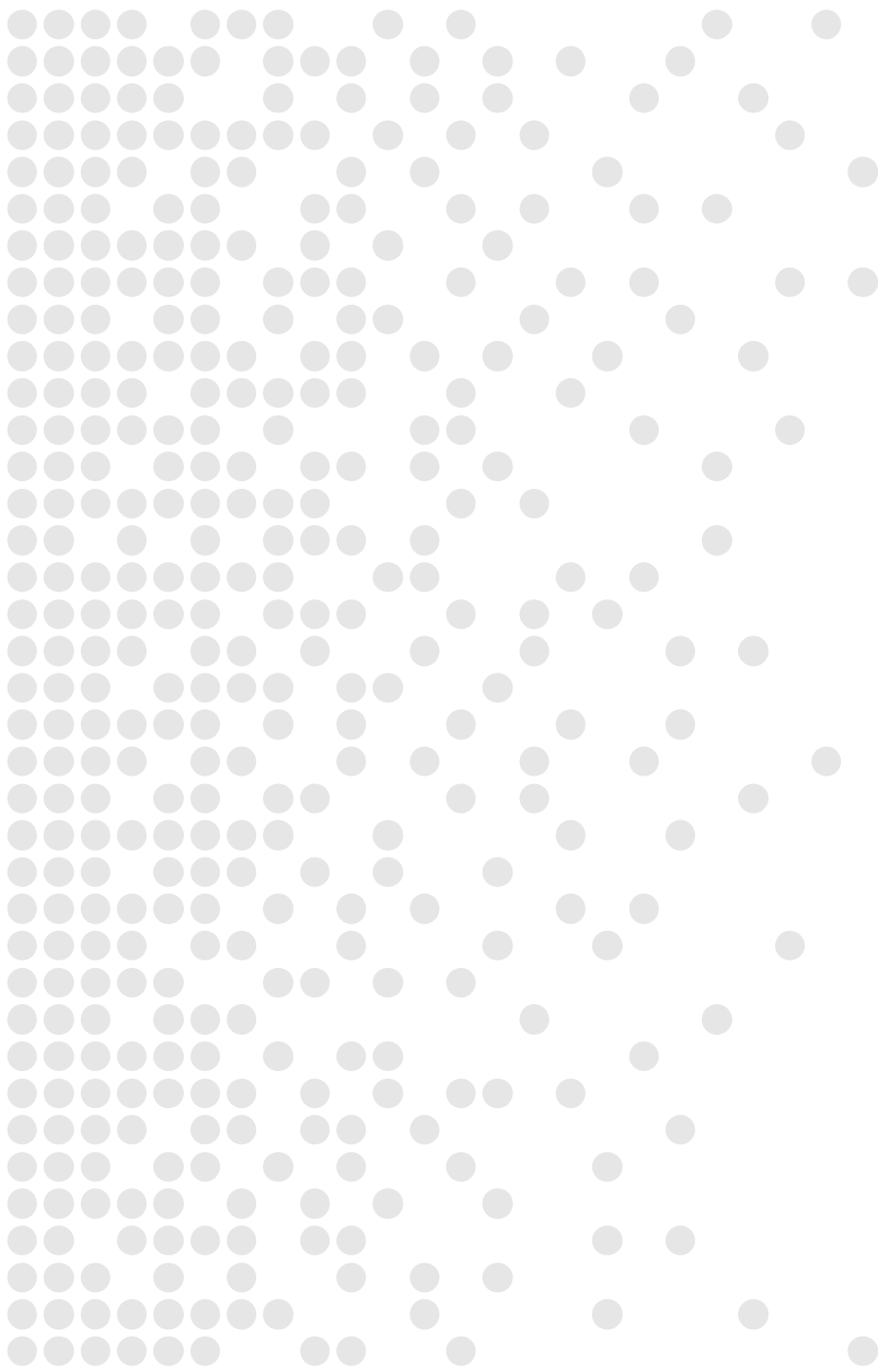
Example 1

Roads

Levels of Service

- There are resources available for developing Levels of Service

- LoS has been the subject of many presentations, workshops, and training courses – and for good reasons!

- There are some resources that we have highlighted in this presentation, but the main focus is on how the proper integration of LoS into the AM framework can produce better outcomes – especially from the perspective of stakeholder buy-in

Levels of Service – Resources

- MFOA Asset Management Framework

    - Available at the MFOA Asset Management Portal (http://www.mfoa-amp.ca/)

- Asset Management Ontario

    - Comprehensive Guide to the Asset Management Process (https://amontario.ca/comprehensive-guide-to-the-asset-management-process-2/)

    - Municipal Metrics Catalogue (https://amontario.ca/municipal-metrics-catalogue_2/)

- Institute of Public Works Engineering Australasia

    - International Infrastructure Management Manual (IIMM)

Levels of Service

Example 1 – Roads

Customer Expectations (Community Levels of Service)

- Ride comfort

- Safety

- Capacity

- Connectivity

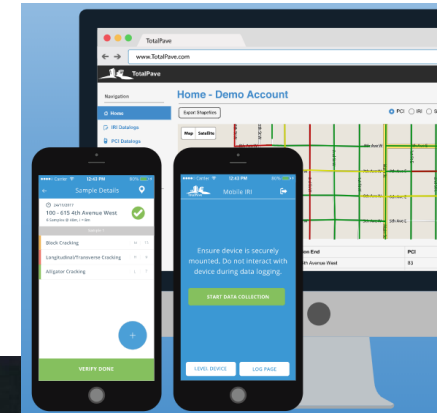**Technical Measures (Technical Levels of Service)**

- Roughness Index (IRI)

- Pavement Condition Index (PCI)

- Surface type (gravel vs paved)

- Road width

- Traffic Count (AADT)

- Volume-to-capacity (V/C)

Condition Data
Road Network Condition Assessment

- Many municipalities have previously completed a Road Needs Study (RNS)

  - Data can be useful even if RNS is outdated

- Options for collecting condition data

  - Specialized company

  - Engineering consultants

  - Internally with use of technology
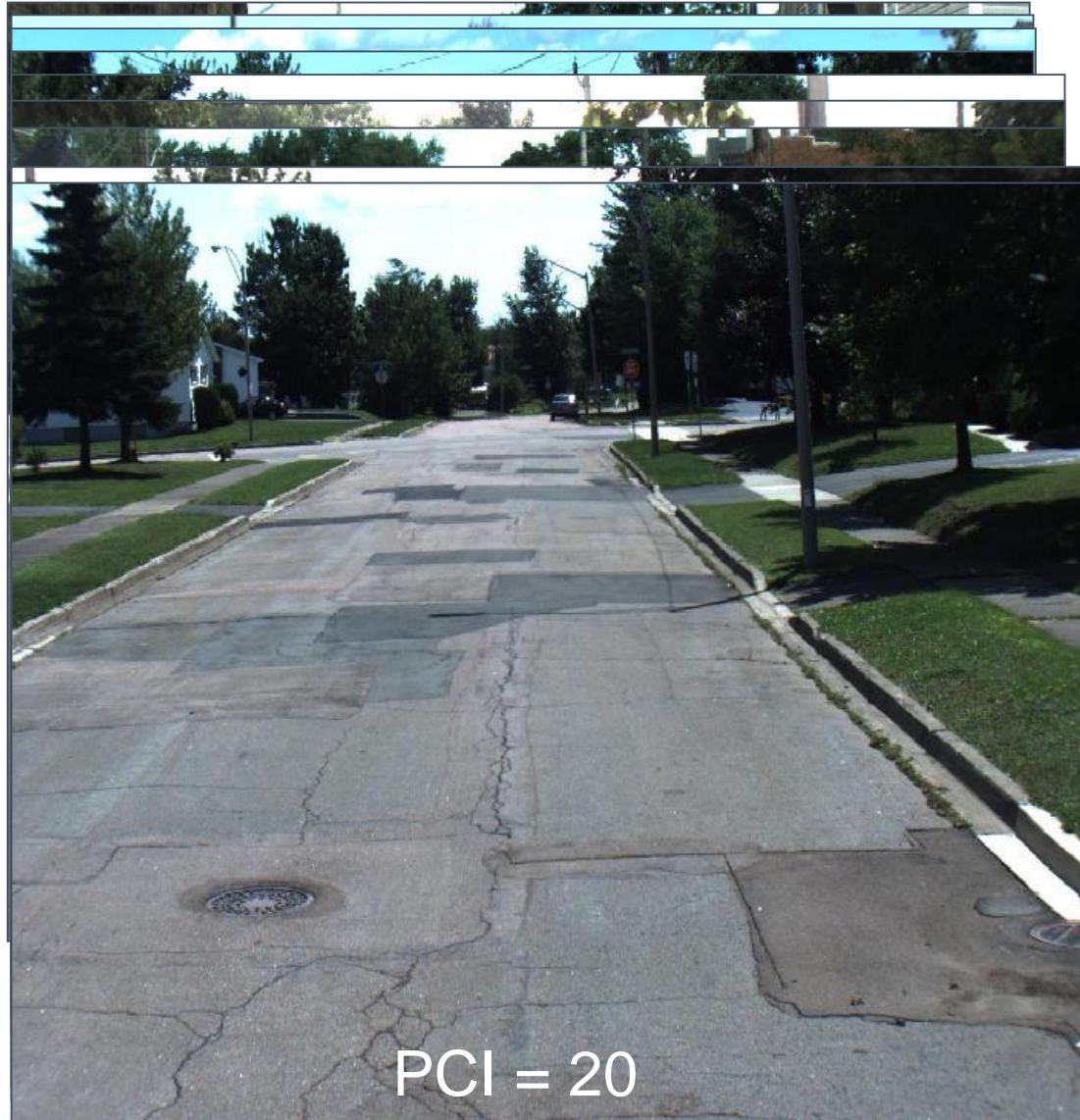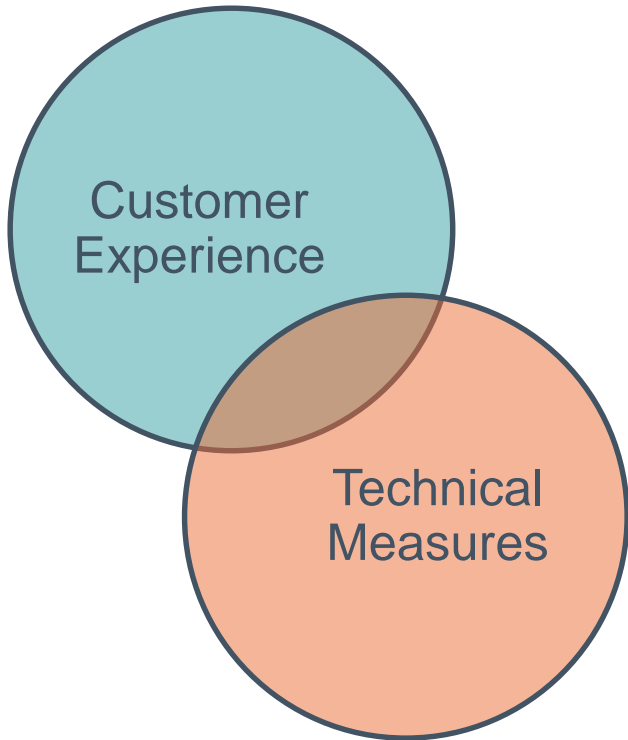
Levels of Service
Example 1 - Roads

Linking the Technical Measure(s) and Customer Experience

PCI = 10

Levels of Service
Example 1 – Roads

Customer Experience

Technical Measures

PCI = 20

Pavement Condition Index	Qualitative Descriptor	
100	Excellent	
83	Very Good	
67	Good	
50	Fair	
33	Poor	
17	Very Poor	
0	Failed	

Levels of Service
Setting LoS Targets

| Road Class	Expected LOS	Example Photo
Arterial	Maintain roads at a PCI ≥ 50	
Collector	Maintain roads at a PCI ≥ 40	
Local	Maintain roads at a PCI ≥ 30	

Levels of Service
Current LoS and Performance

- Proportion of road network that does not meet the expected level of service, by road class

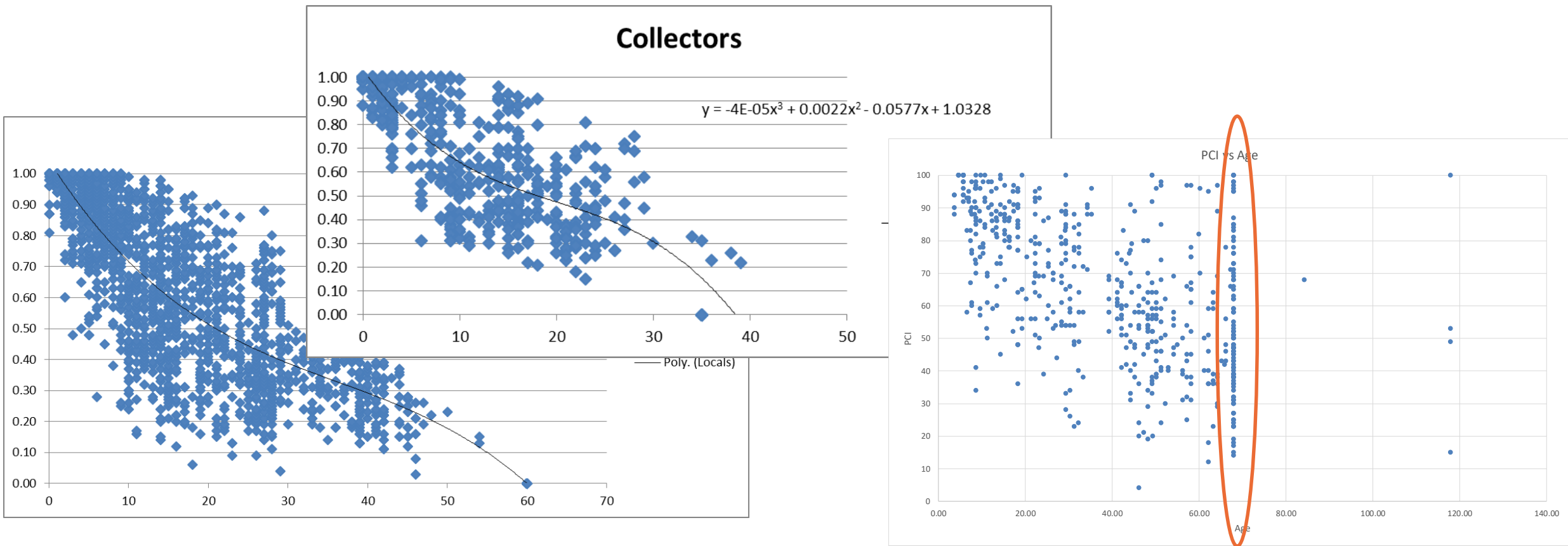| Road Class	Expected LOS (PCI)	Current LOS (Weighted Avg. PCI)	% of Class Below Expected LOS
Arterial	50	82	12%
Collector	40	74	8%
Local	30	68	10%
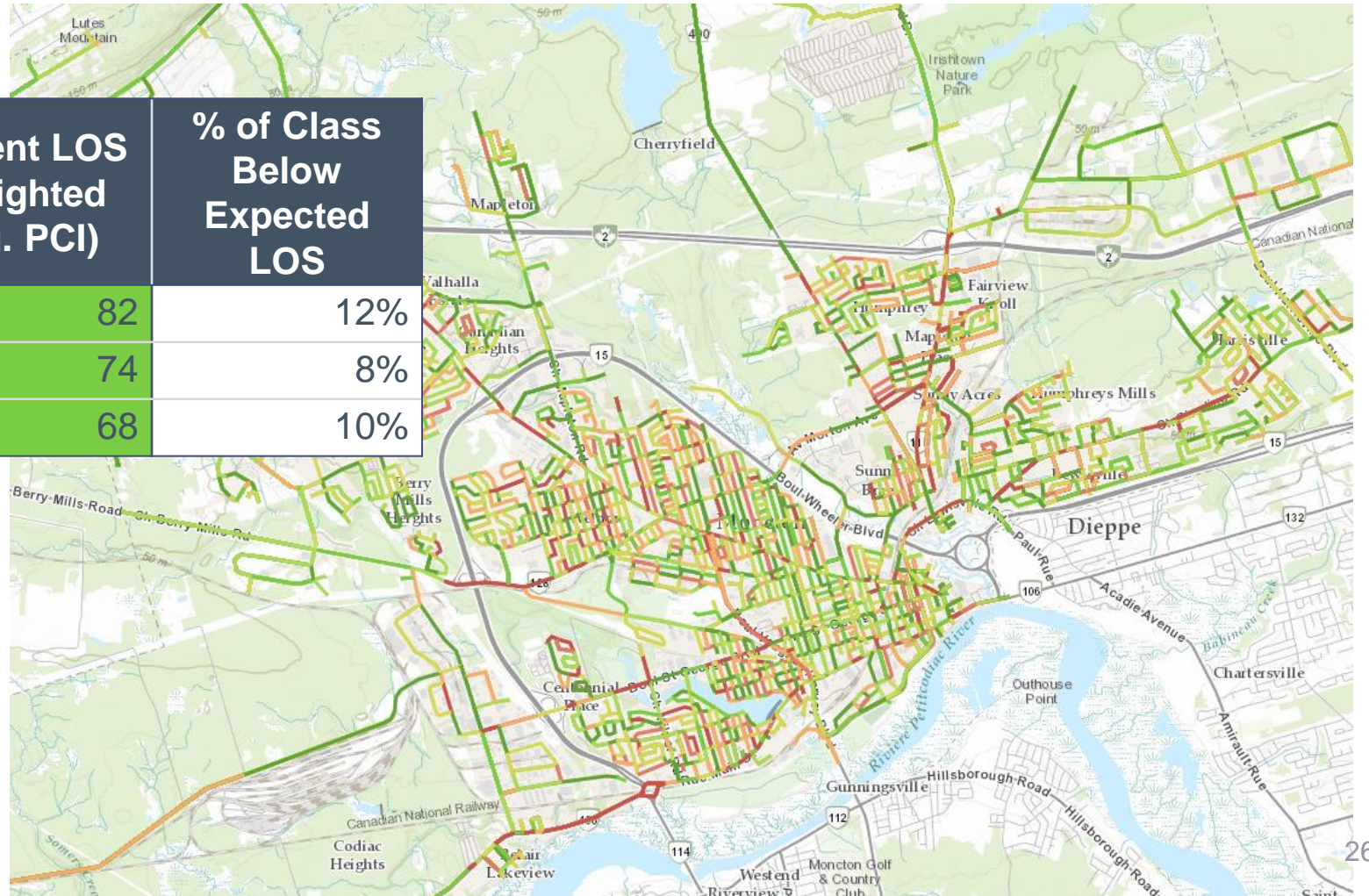
Levels of Service
Asset Degradation

- To understand how LoS will change over time, we need to understand how the asset "health" (condition) changes over time

- Typical starting point for this analysis may be looking at an existing Road Needs Study or condition data

  - If data include condition and age then we can analyze correlation between these variables

- Alternatively, if multiple Road Needs Studies are available, could look at how asset condition changes between those studies

  - Further enhanced if lifecycle activities have been documented – to provide understanding of the effect of those activities over time

Levels of Service
Asset Degradation

- Data are rarely perfect – need to engage appropriate staff to validate results of analysis
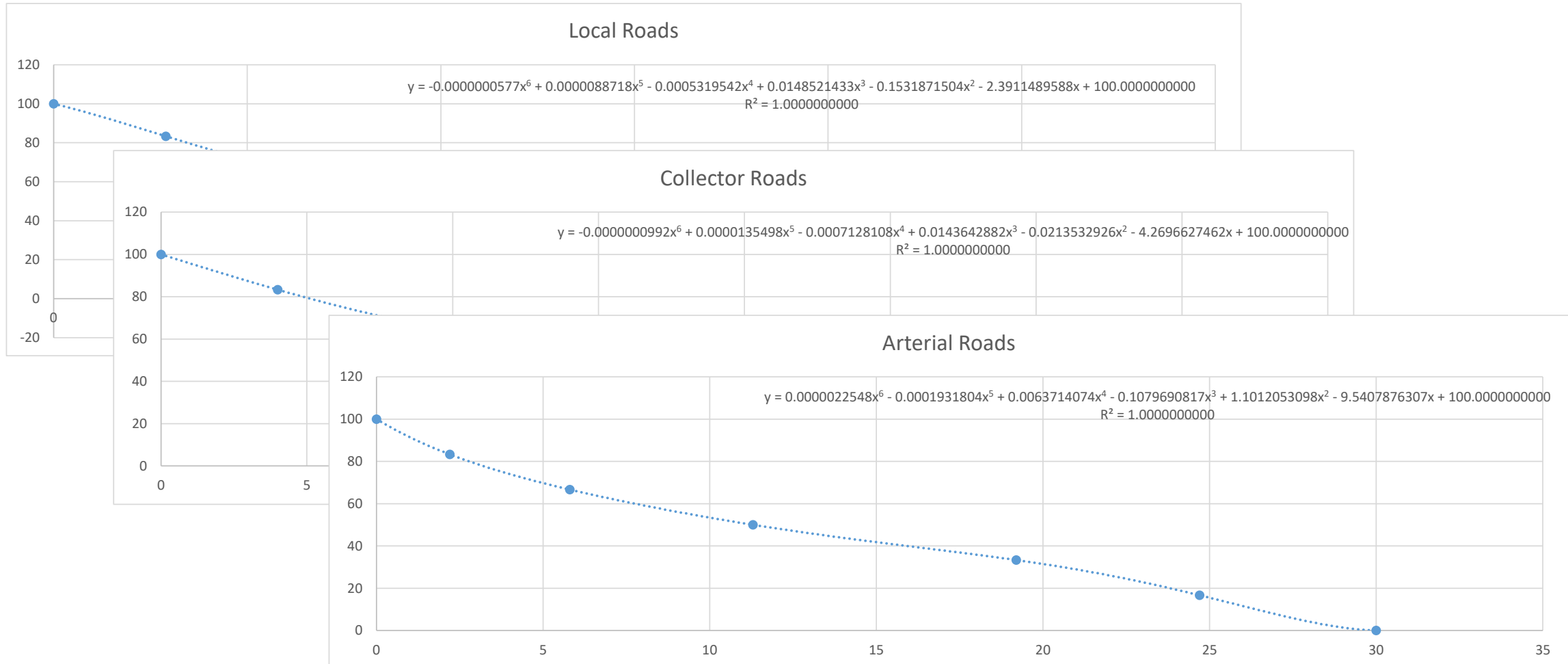
Levels of Service
Asset Degradation

- Refining the statistical analysis into a usable format

Local Roads

$y = -0.0000000577x^6 + 0.0000088718x^5 - 0.0005319542x^4 + 0.0148521433x^3 - 0.1531871504x^2 - 2.3911489588x + 100.0000000000$
$R^2 = 1.0000000000$

Collector Roads

$y = -0.0000000992x^6 + 0.0000135498x^5 - 0.0007128108x^4 + 0.0143642882x^3 - 0.0213532926x^2 - 4.2696627462x + 100.0000000000$
$R^2 = 1.0000000000$

Arterial Roads

$y = 0.0000022548x^6 - 0.0001931804x^5 + 0.0063714074x^4 - 0.1079690817x^3 + 1.1012053098x^2 - 9.5407876307x + 100.0000000000$
$R^2 = 1.0000000000$

Levels of Service
Assed Degradation Illustrated
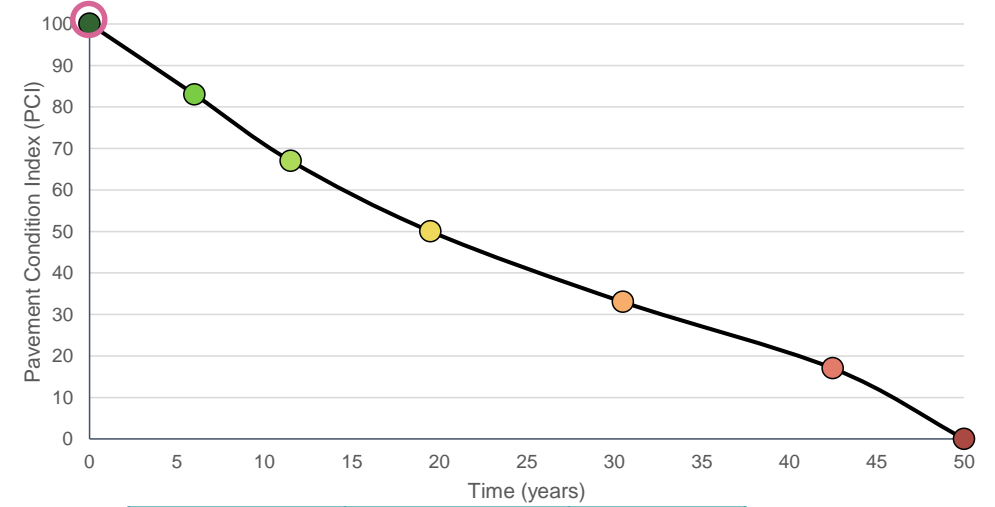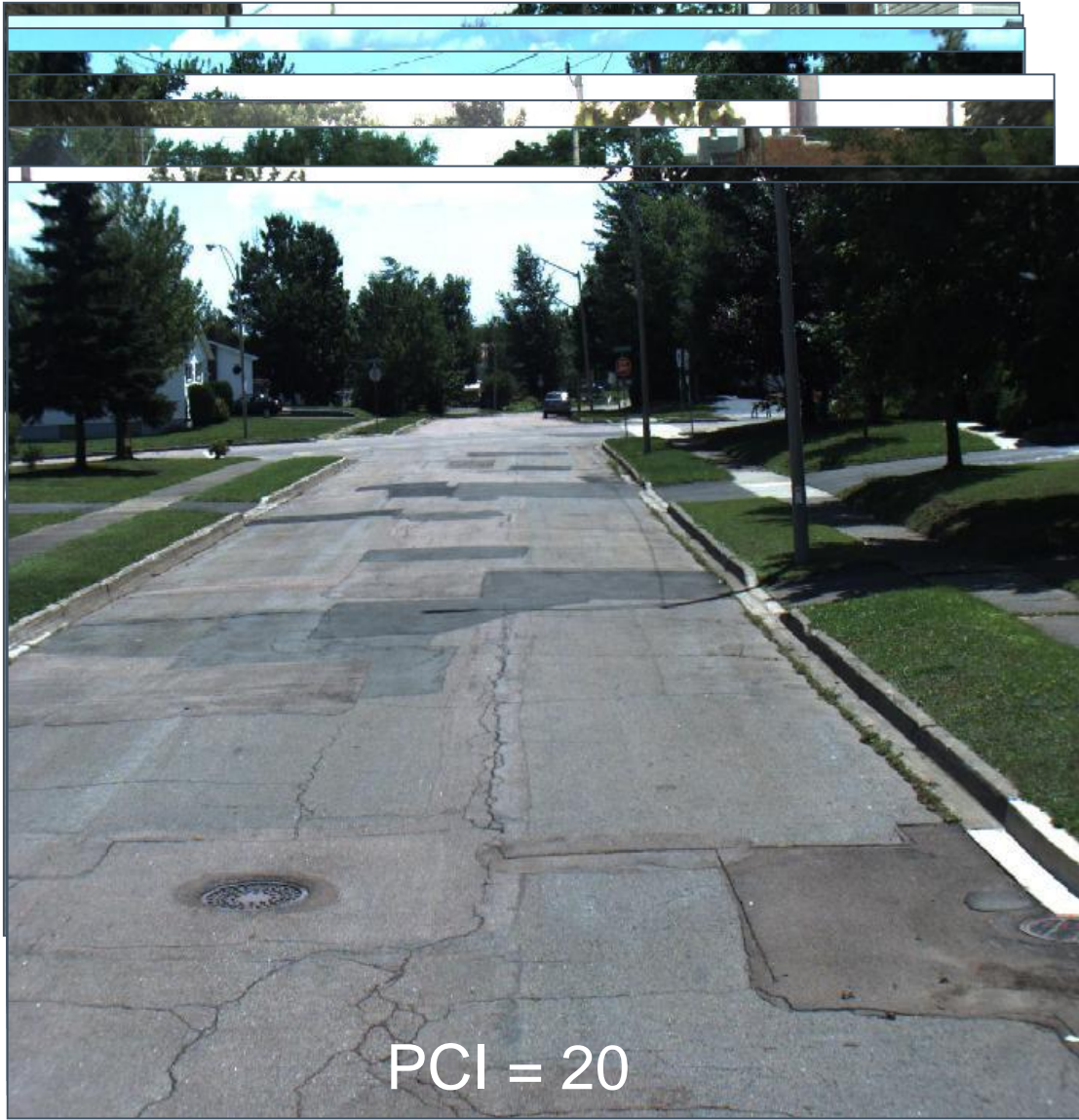
PCI = 20

Pavement Condition Index	Qualitative Descriptor	
100	Excellent	
83	Very Good	
67	Good	
50	Fair	
33	Poor	
17	Very Poor	
0	Failed	

Lifecycle Activities
Arterial Road

- What are the lifecycle activities that can be preformed to improve the condition and extend the life of the asset? In other words, what lifecycle activities are undertaken to ensure service is provided at appropriate level?

- Examples from this municipal example:

  - Microsurfacing

  - Resurfacing

  - Reconstruction

Lifecycle Activities
Arterial Road

- What criteria are required for a given lifecycle activity to be considered?

    - Microsurfacing

        - The PCI is at or above 85

        - Repeated twice after a reconstruction, and once after a resurfacing treatment

    - Resurfacing

        - The PCI is between 50 and 20

        - Repeated twice after a reconstruction

    - Reconstruction

        - No PCI restriction

Lifecycle Activities
Documenting "Decision Logic"

- Sample template to use when identifying lifecycle activities and the decision criteria

Treatment	Road Class	Decision Criteria			Treatment Effect - PCI Following Treatment
		PCI	# of Microsurfaces Prev. Performed	# of Resurfaces Prev. Performed	
First Microsurface	Arterial	85-80	0	n/a	100
	Collector				
Second Microsurface	Arterial	85-80	1	0	100
	Collector				
First Resurface	Arterial	50-20	n/a	0	100
	Collector	40-20			
	Local	30-20			
Second Resurface	Arterial	50-20	n/a	1	100
Reconstruction	Arterial	≤50	n/a	n/a	100
	Collector	≤40			
	Local	≤30			

Lifecycle Activities
Arterial Road

- Illustrating the treatments and their effects

51 years useful life
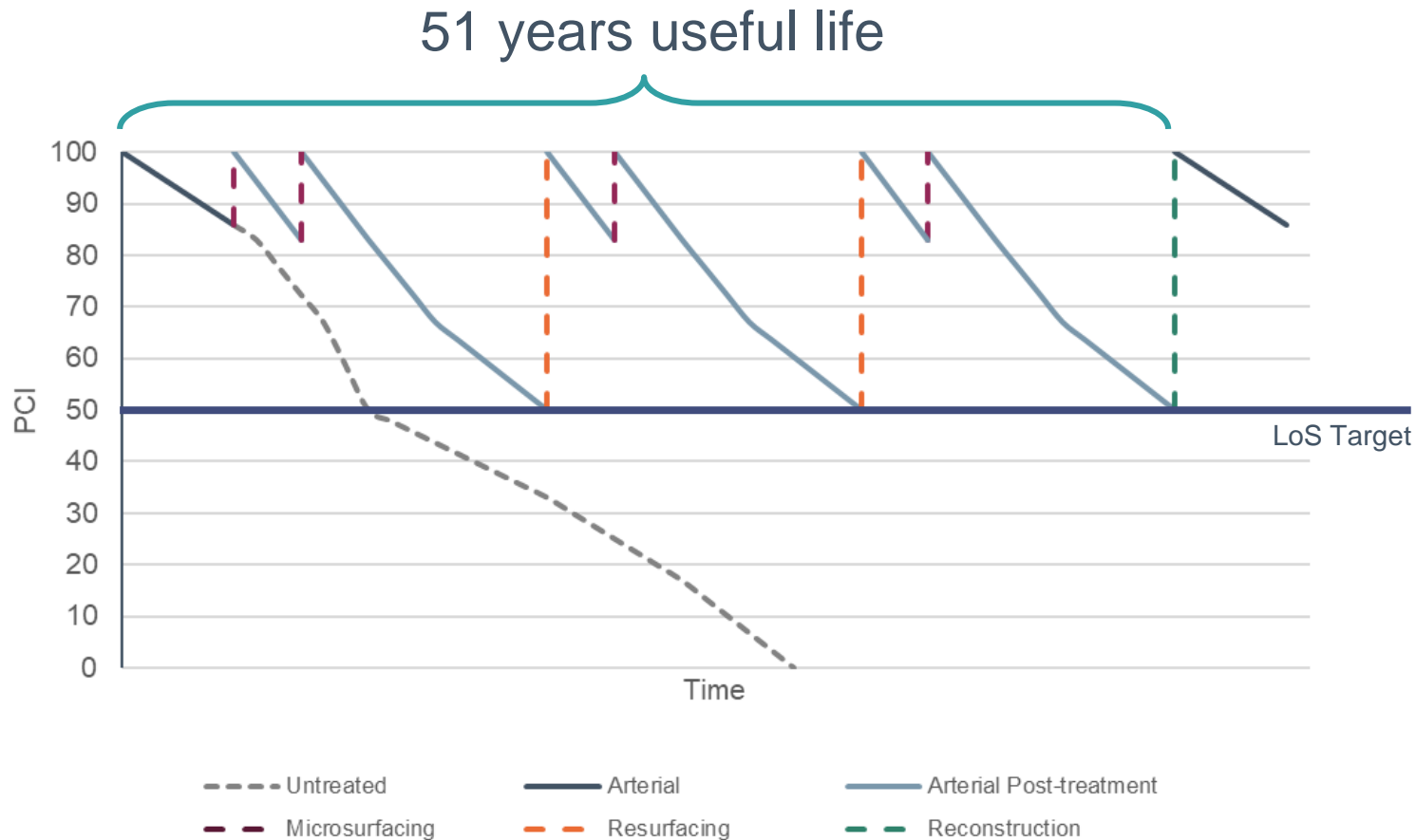
Year	Lifecycle Activity	Cost per m²
0	Initial Construction	$130.00
7	Microsurfacing	$8.50
10	Microsurfacing	$8.50
21	Resurfacing	$45.00
25	Microsurfacing	$8.50
36	Resurfacing	$45.00
40	Microsurfacing	$8.50
51	Total Lifecycle Costs	$254.00

Annual Lifecycle Cost = $4.98/m²

Legend: Untreated, Arterial, Arterial Post-treatment, Microsurfacing, Resurfacing, Reconstruction

34

Lifecycle Activities – Compared to Generation 1 AMP
Arterial Road

51 years useful life

35 years UL

PCI — Time — LoS Target

Legend:
- - - Untreated
— Arterial
— Arterial Post-treatment
- - - Microsurfacing
- - - Resurfacing
- - - Reconstruction
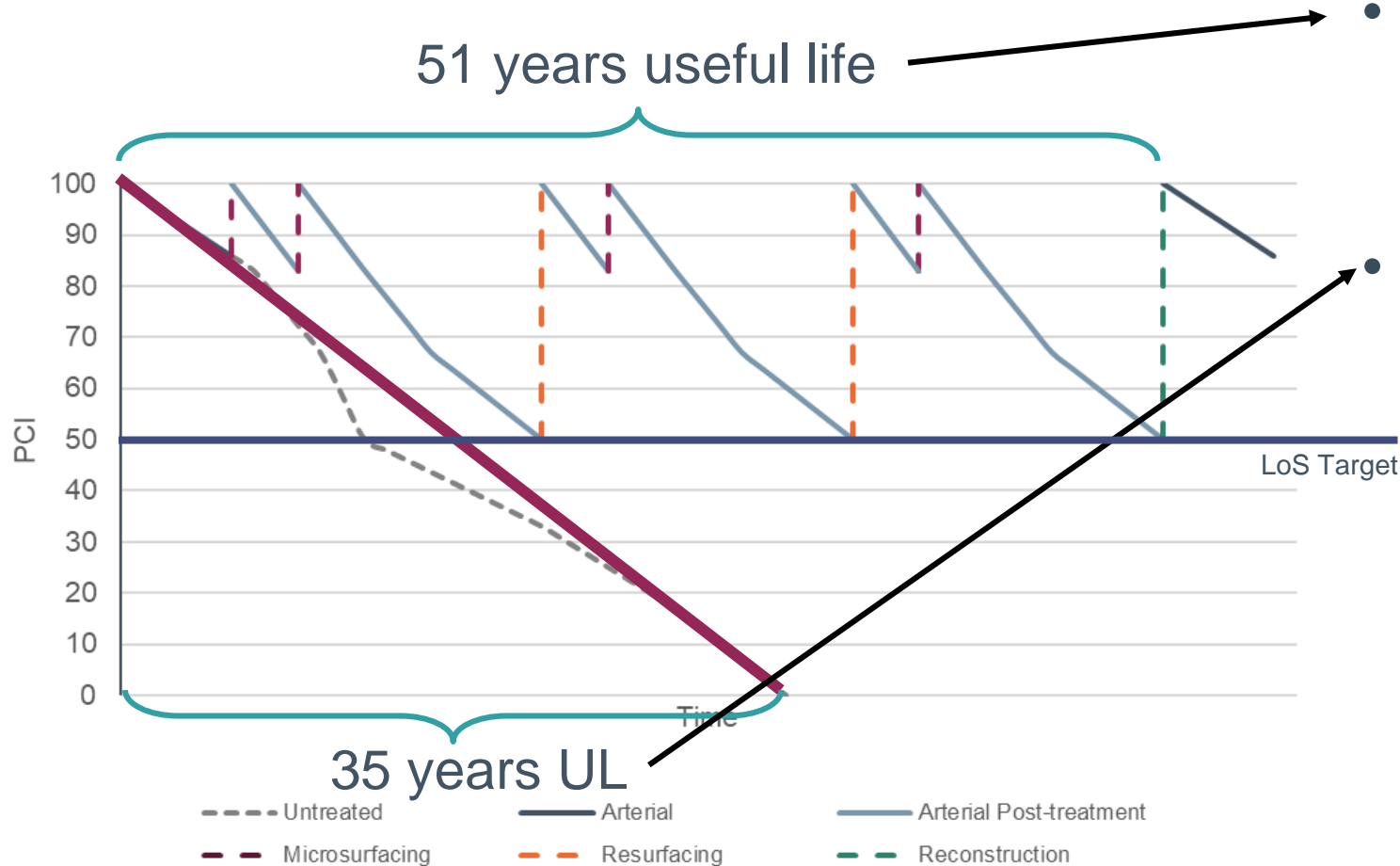
Comparison A:

- With a well defined LMS the annual lifecycle cost is $4.98/m²

Under the Generation 1 approach, the annual lifecycle cost would be $3.71/m² (cost of reconstruction/UL)

- Cost is under-stated
- LoS is not achieved

Lifecycle Activities – Compared to Generation 1 AMP
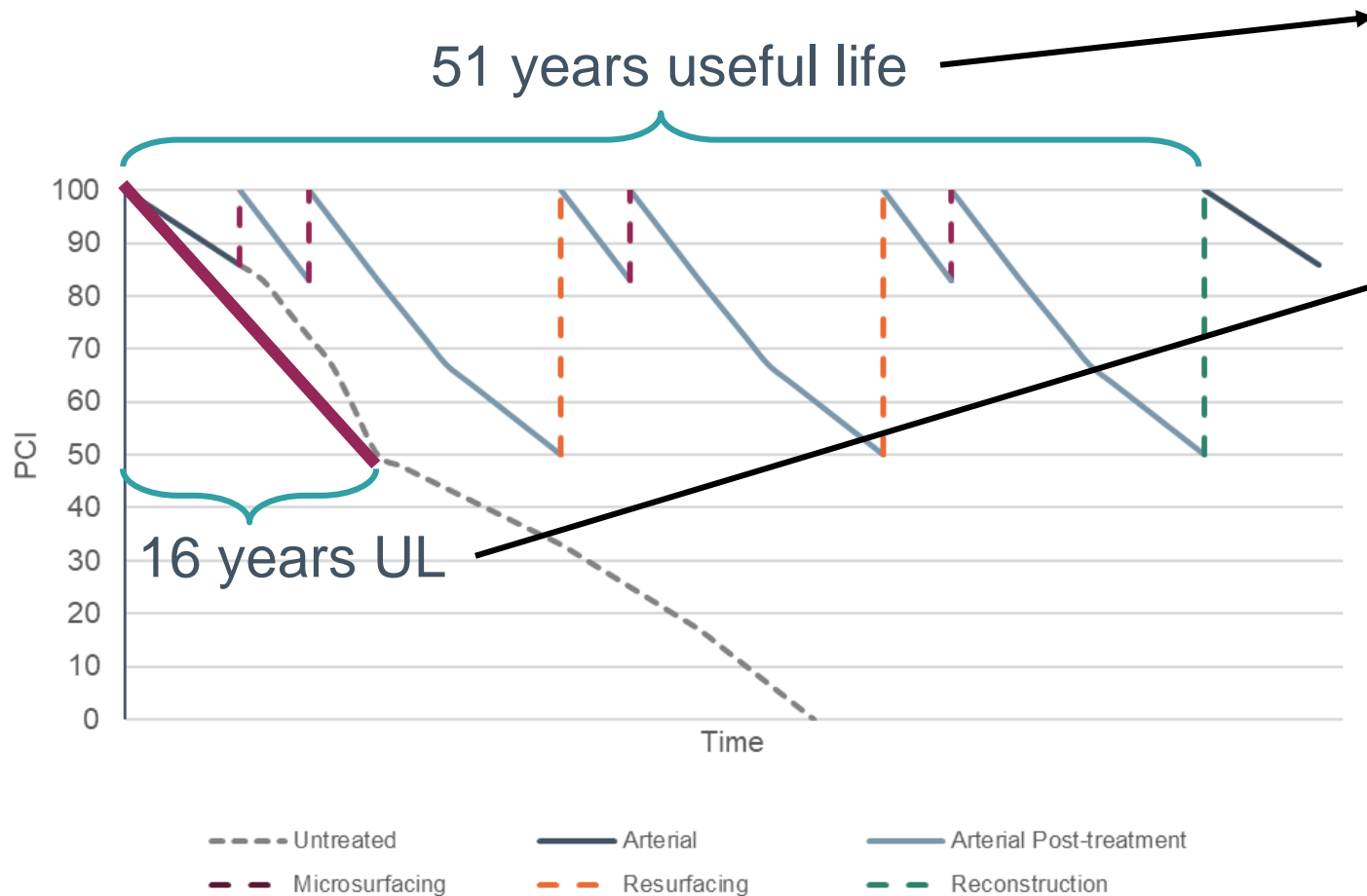## Arterial Road

Comparison B:

- With a well defined LMS the annual lifecycle cost is $4.98/m²

- Under the Generation 1 approach, the annual lifecycle cost would be $8.13/m² (cost of reconstruction/UL)

  - Cost is over-stated

51 years useful life

16 years UL

PCI

Time

- - - - Untreated
——— Arterial
——— Arterial Post-treatment
- - - Microsurfacing
- - - Resurfacing
- - - Reconstruction
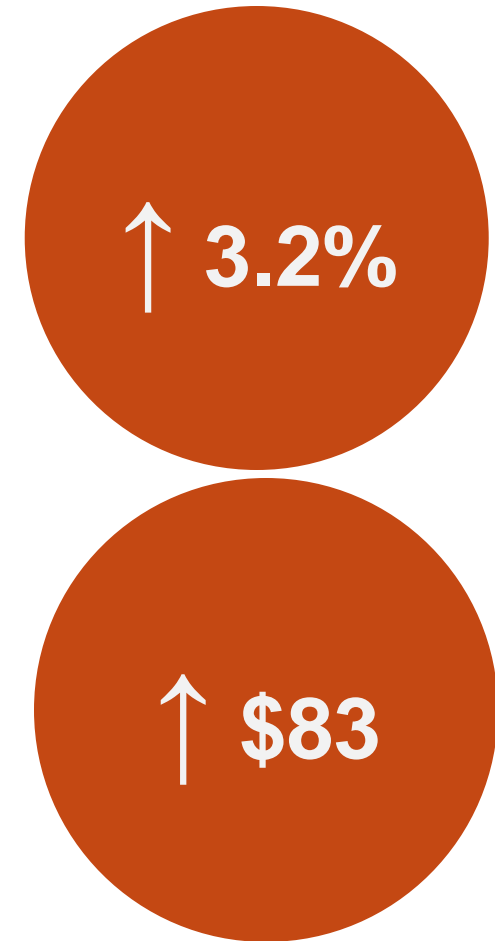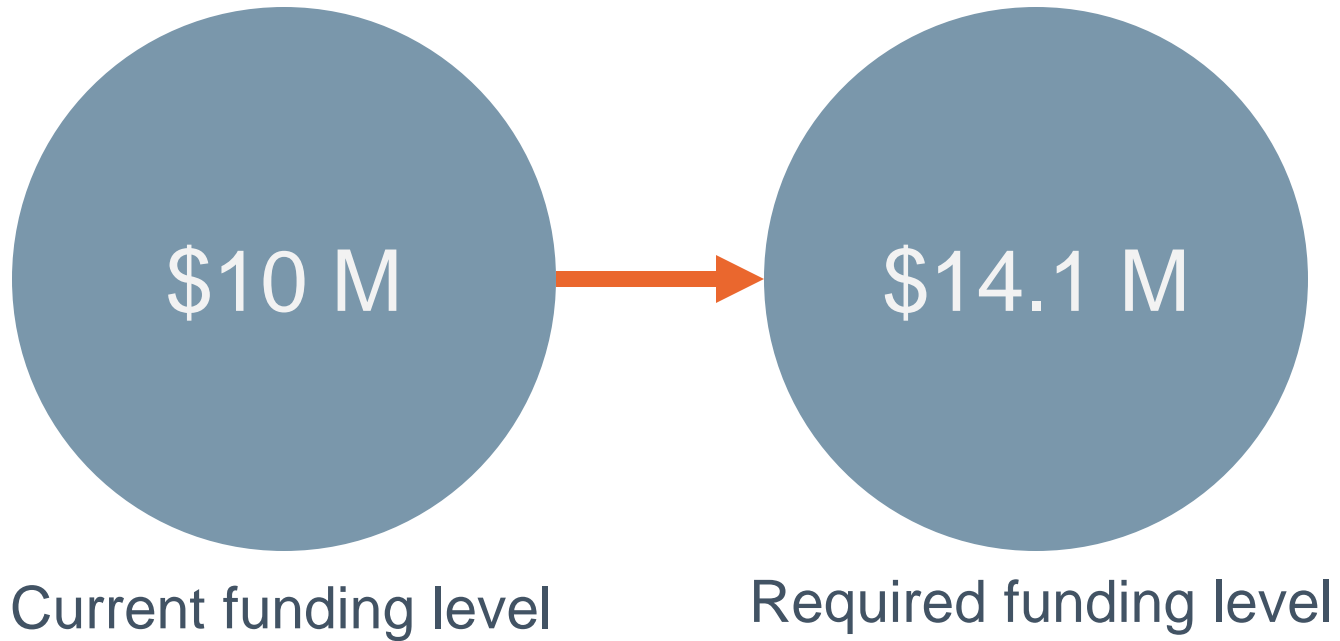
Lifecycle Costs
Lifecycle Costs for Entire Road Network

- Consider cost variations – e.g. rural versus urban cross-section

Road Class	Annual Lifecycle Cost (per m²)	Network Measure (m²)	Total Annual Lifecycle Cost
Rural Arterial	$3.61	182,177	$657,267
Urban Arterial	$4.98	705,569	$3,514,013
Rural Collector	$2.30	138,480	$318,035
Urban Collector	$3.31	863,978	$2,862,841
Rural Local	$1.37	204,271	$279,823
Urban Local	$2.26	2,841,329	$6,422,182
Total			**$14,054,160**

Financial Impacts
Annual Tax Bill Impacts

$10 M

$14.1 M

Current funding level

Required funding level

↑ **3.2%**

↑ **$83**

Annual tax bill impact

Pause for Reflection

- So far, we have done the following:

  - Defined LoS expectation

  - Analyzed current asset condition and degradation patterns

  - Documented and costed lifecycle activities (defined a lifecycle management strategy)

  - Assessed the financial impact of moving towards a sustainable funding level

- Note that everything done to this point does not require the use of any specialized tools or software (other than basic Excel analysis)

Pause for Reflection

- What is missing?

  - Haven't demonstrated in a meaningful way how the LoS will evolve over time

    - Need to manage expectations – LoS targets may not be met overnight. How will lifecycle activities be prioritized on the path to meeting LoS targets?

  - Haven't produced a forecast of lifecycle activities

  - Haven't provided any options

    - What would be the impact of maintaining current funding levels?

    - Are there other LoS alternatives?

Illustrating LoS Outcomes
Outcomes at Current Funding Level

- Logical question is – what if we don't want to pay higher taxes?

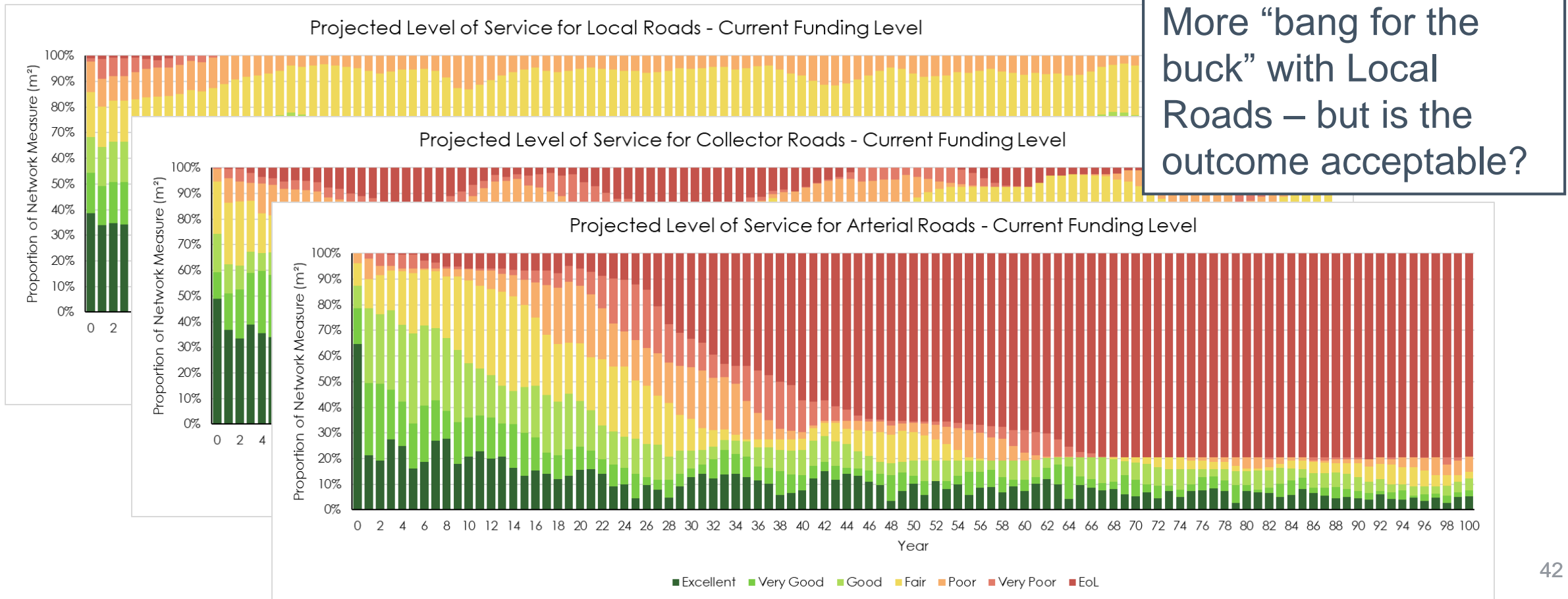Projected Level of Service for Entire Road Network - Current Funding Level
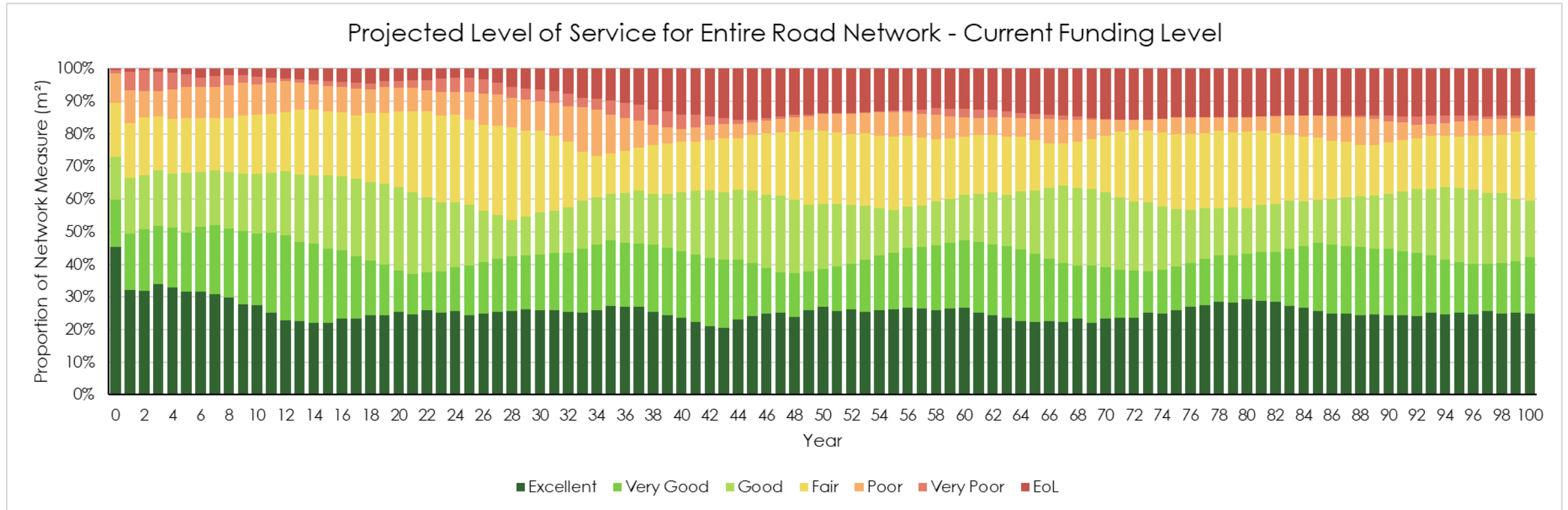
- The graph indicates that the overall LoS will deteriorate over time relative to the current state.

Illustrating LoS Outcomes
Outcomes at Current Funding Level (disaggregated)

- In the municipality's lifecycle model, the optimization is based on the highest benefit per dollar spent

Projected Level of Service for Local Roads - Current Funding Level

Projected Level of Service for Collector Roads - Current Funding Level

Projected Level of Service for Arterial Roads - Current Funding Level

More "bang for the buck" with Local Roads – but is the outcome acceptable?

Excellent ■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor ■ EoL

Illustrating LoS Outcomes
Outcomes at Current Funding Level (disaggregated)

Classification	LoS Target (PCI)	Performance Measure	Year										
			0	1	2	3	4	5	6	7	8	9	10
Local	30	Average PCI	68	63	64	64	64	65	65	65	66	66	65
		% Below Target	10%	15%	13%	13%	12%	11%	11%	11%	10%	9%	10%
Collector	40	Average PCI	74	65	65	67	66	65	63	63	62	60	63
		% Below Target	8%	18%	24%	22%	23%	24%	25%	25%	26%	26%	22%
Arterial	50	Average PCI	82	66	67	67	64	62	64	65	63	61	60
		% Below Target	12%	20%	18%	18%	22%	26%	25%	22%	27%	31%	35%
Overall	as indicated above	Average PCI	72	64	65	65	65	64	65	65	64	64	64
		% Below Target	10%	17%	16%	16%	16%	16%	16%	16%	16%	16%	17%

Levels of Service
## Recognizing Criticality/Relative Importance

- Recognizing asset criticality helps us prioritize where spending <u>matters</u> most

- Some examples of asset criticality factors include the following:

  - Road classification (e.g. Local/Collector/Arterial)

  - Traffic counts

  - Location (e.g. CIP area)

  - Traffic type (e.g. truck route)

- Let's look at the outcome of prioritizing Arterial and Collector roads within the current funding

Illustrating LoS Outcomes
Prioritized Outcomes at Current Funding Level

- Prioritization based on road classification
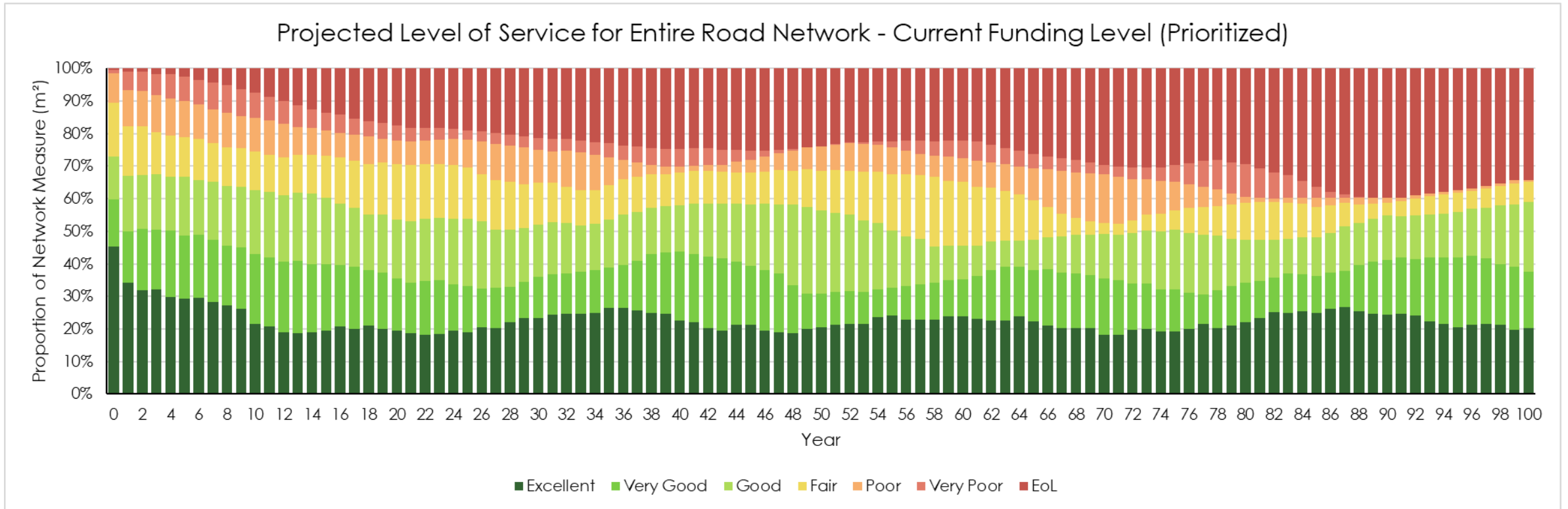
Projected Level of Service for Entire Road Network - Current Funding Level (Prioritized)
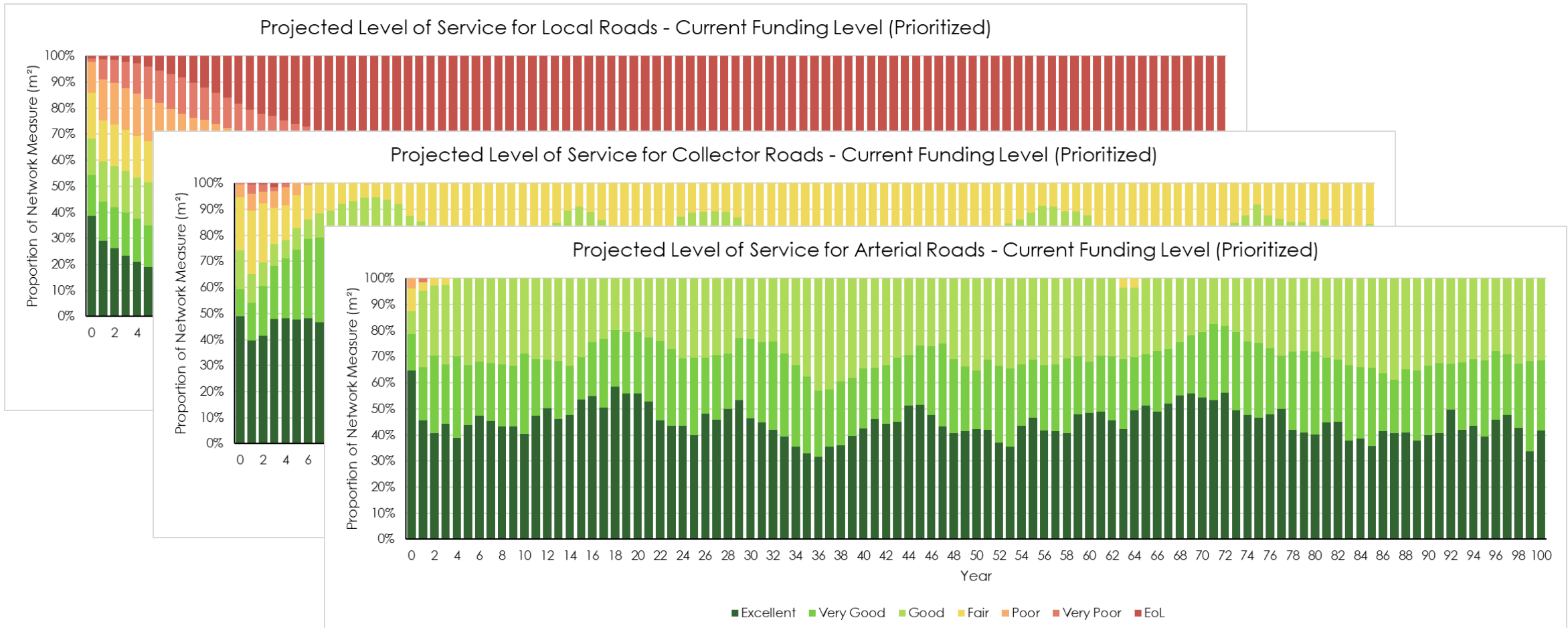
Illustrating LoS Outcomes
Prioritized Outcomes at Current Funding Level (disaggregated)

- Prioritization based on road classification

Illustrating LoS Outcomes
Prioritized Outcomes at Current Funding Level (disaggregated)

Classification	LoS Target (PCI)	Performance Measure	Year										
			0	1	2	3	4	5	6	7	8	9	10
Local	30	Average PCI	68	59	57	55	53	51	50	48	46	45	43
		% Below Target	10%	20%	22%	24%	25%	28%	30%	32%	35%	35%	38%
Collector	40	Average PCI	74	68	70	74	75	77	79	79	79	79	77
		% Below Target	8%	15%	16%	12%	11%	8%	5%	4%	3%	0%	1%
Arterial	50	Average PCI	82	79	80	78	79	80	79	79	79	78	79
		% Below Target	12%	4%	1%	2%	0%	0%	0%	0%	0%	0%	0%
Overall	as indicated above	Average PCI	72	64	64	63	62	62	61	60	59	58	57
		% Below Target	10%	16%	17%	18%	18%	19%	20%	21%	22%	22%	24%

Illustrating LoS Outcomes
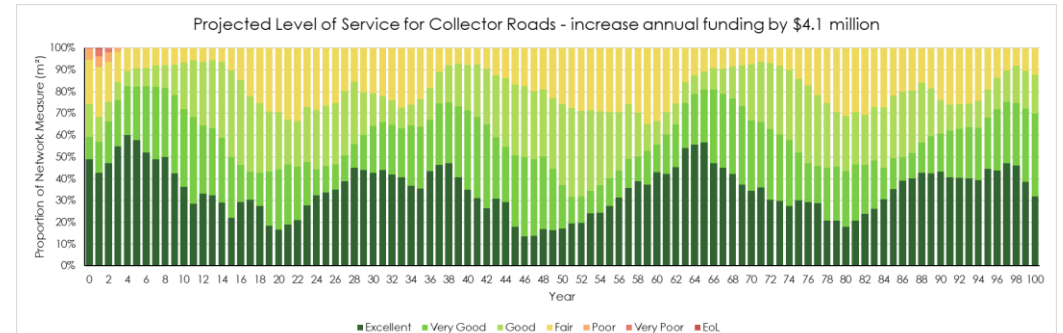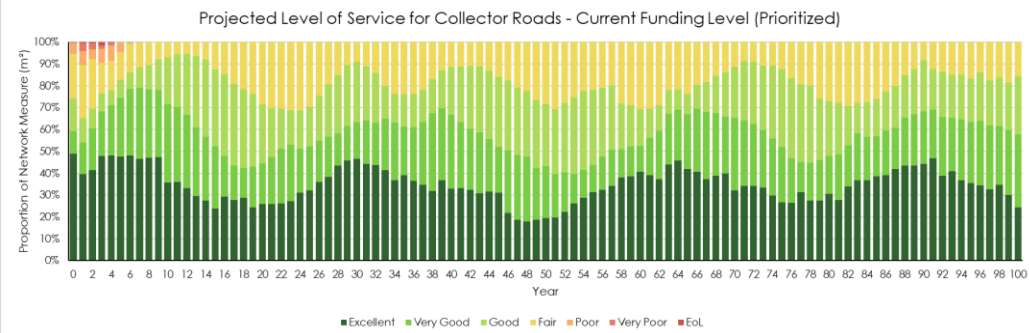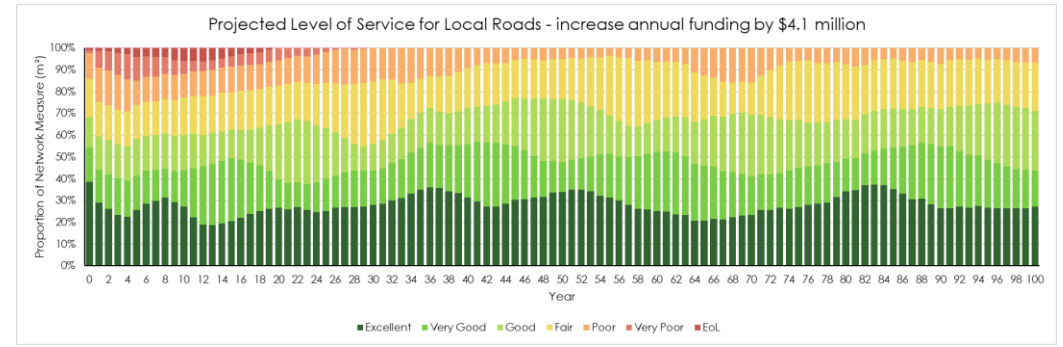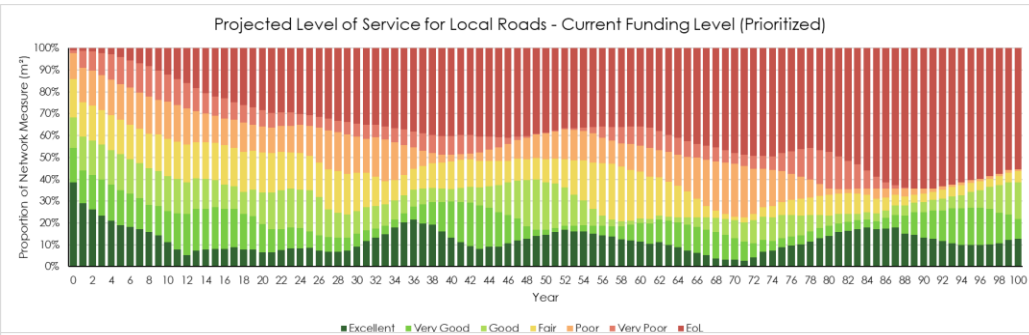## Comparing Alternatives

No additional tax

$83 more on tax bill (3.2% ↑)

Local

Collector

Arterial
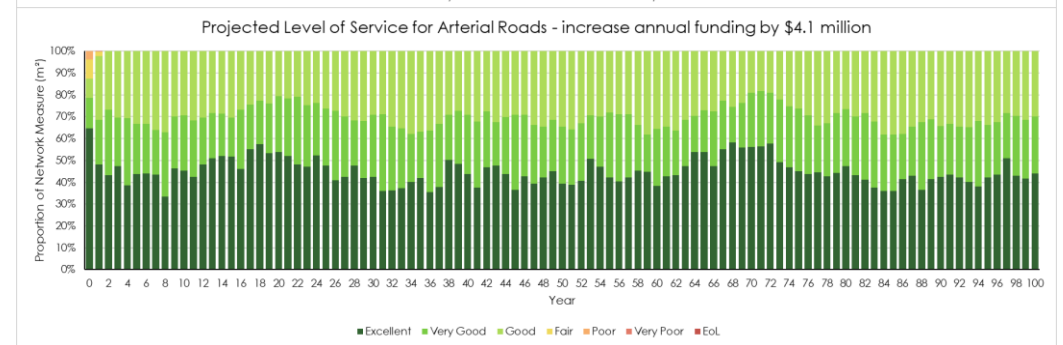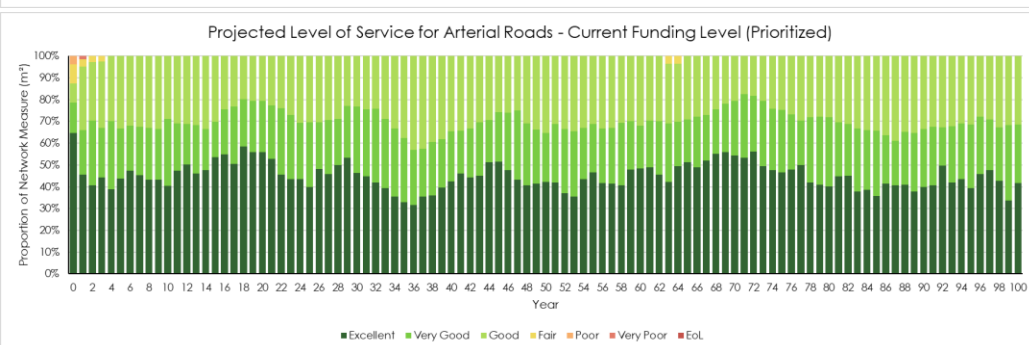
Illustrating LoS Outcomes

## Comparing Alternatives – short-term (10-year) outcomes

Classification	LoS Target (PCI)	Performance Measure	Year										
			0	1	2	3	4	5	6	7	8	9	10
Local	30	Average PCI	68	59	57	55	53	51	50	48	46	45	43
		% Below Target	10%	20%	22%	24%	25%	28%	30%	32%	35%	35%	38%
Collector	40	Average PCI	74	68	70	74	75	77	79	79	79	79	77
		% Below Target	8%	15%	16%	12%	11%	8%	5%	4%	3%	0%	1%
Arterial	50	Average PCI	82	79	80	78	79	80	79	79	79	78	79
		% Below Target	12%	4%	1%	2%	0%	0%	0%	0%	0%	0%	0%
Overall	as indicated above	Average PCI	72	64	64	63	62	62	61	60	59	58	57
		% Below Target	10%	16%	17%	18%	18%	19%	20%	21%	22%	22%	24%

No additional tax

Classification	LoS Target (PCI)	Performance Measure	Year										
			0	1	2	3	4	5	6	7	8	9	10
Local	30	Average PCI	68	59	57	55	55	56	58	58	59	58	58
		% Below Target	10%	20%	22%	24%	24%	21%	20%	19%	19%	19%	19%
Collector	40	Average PCI	74	70	74	80	83	82	81	81	80	78	77
		% Below Target	8%	12%	10%	5%	0%	0%	0%	0%	0%	0%	0%
Arterial	50	Average PCI	82	81	81	79	79	79	78	78	77	80	79
		% Below Target	12%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Overall	as indicated above	Average PCI	72	65	65	65	65	66	66	66	66	66	66
		% Below Target	10%	15%	16%	16%	15%	13%	12%	12%	11%	12%	12%

$83 more on tax bill (3.2% ↑)

Illustrating LoS Outcomes
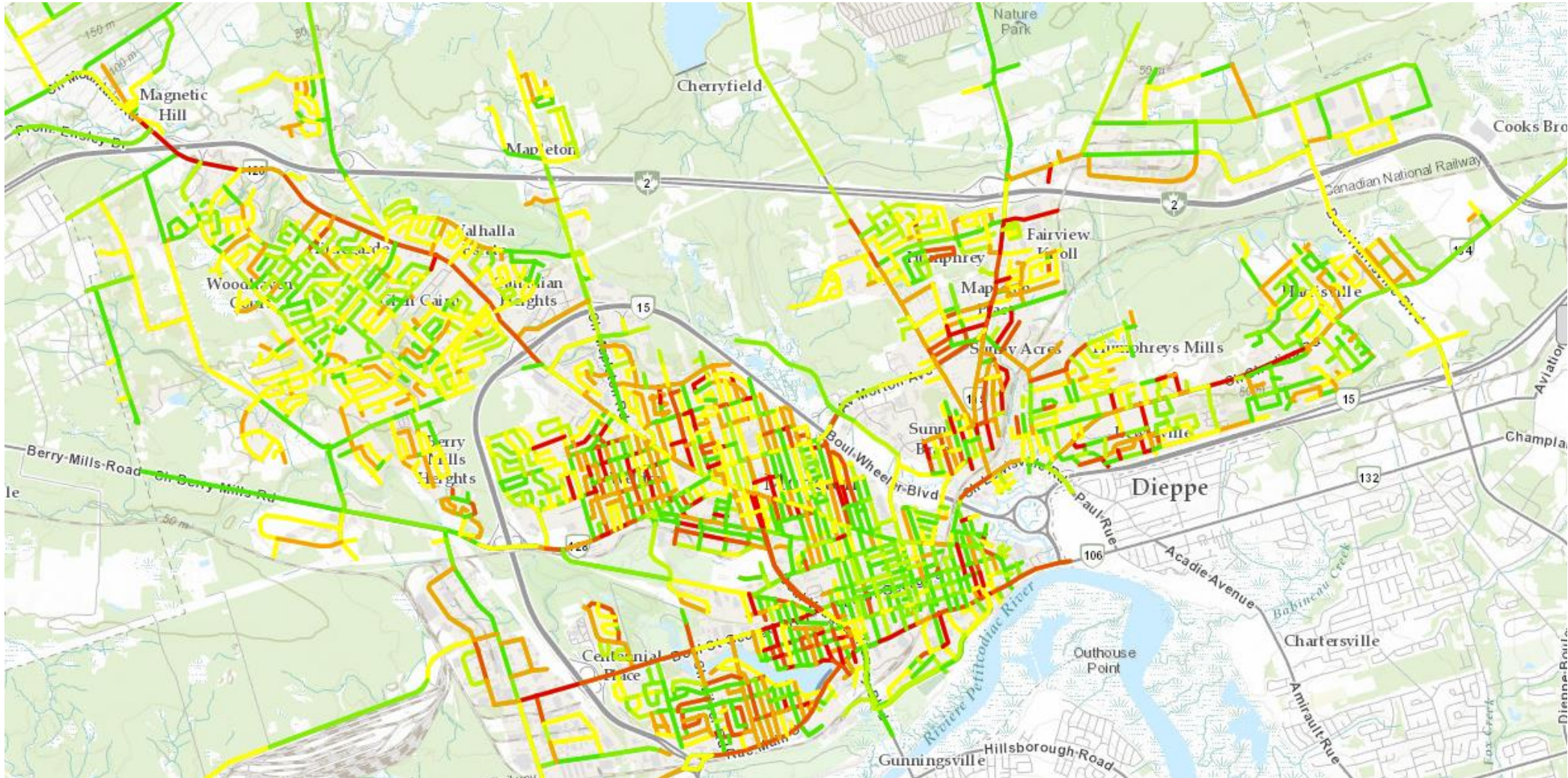
Lifecycle Activity Forecast
Works Prioritization Details Sample

- Staff buy-in and budget integration

Treatment Name	Cost	Percentage
First Microsurfacing - Arterial	$247,768.33	1.76%
First Microsurfacing - Collector	$358,512.19	2.54%
First Resurface - Collector	$914,415.04	6.49%
First Resurface - Local	$36,651.05	0.26%
Reconstruction - Arterial	$4,421,392.07	31.37%
Reconstruction - Collector	$6,517,199.77	46.23%
Second Microsurfacing - Arterial	$42,234.72	0.30%
Second Microsurfacing - Collector	$148,029.76	1.05%
Second Resurface - Arterial	$1,410,127.40	10.00%
Annual Total	$14,096,330.34	100.0 %

Asset ID	Asset Name	Network Measure	Cost
R00662	Mountain Rd from Ensley to Tee Time	2091.13	$271,847.35
R02476	Salisbury Rd from Arnold to Hump Yard	3440.57	$447,273.87
R02318	Salisbury Rd from Jabez to Coral	6573.03	$854,493.93
R01496	Salisbury Rd from Wright to Dutchill	3897.67	$506,697.35
R01402	Shediac Rd from Branch to Meadow	1492.61	$194,039.36
R00661	Shediac Rd from Dove to city limits	1693.75	$152,437.27
R00437	Shediac Rd from McAuley to Branch	4484.21	$582,947.69
R02332	Shediac Rd from Meadow to Glengrove	7741.62	$1,006,410.73
R02525	Shediac Rd from Trans Canada Ramp to Trans Canada Ramp	2509.88	$225,888.99
R01985	St George Blvd from Third to Fourth	1379.66	$179,355.52
	Total Cost		$4,421,392.07
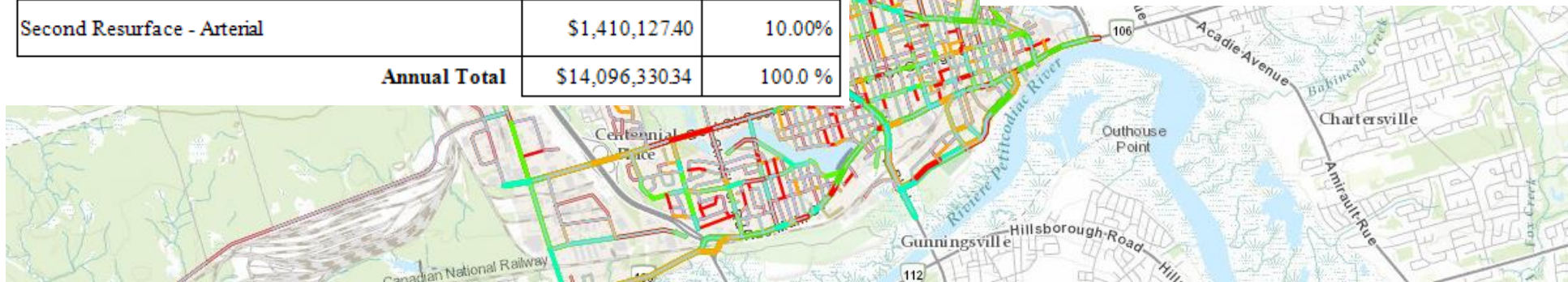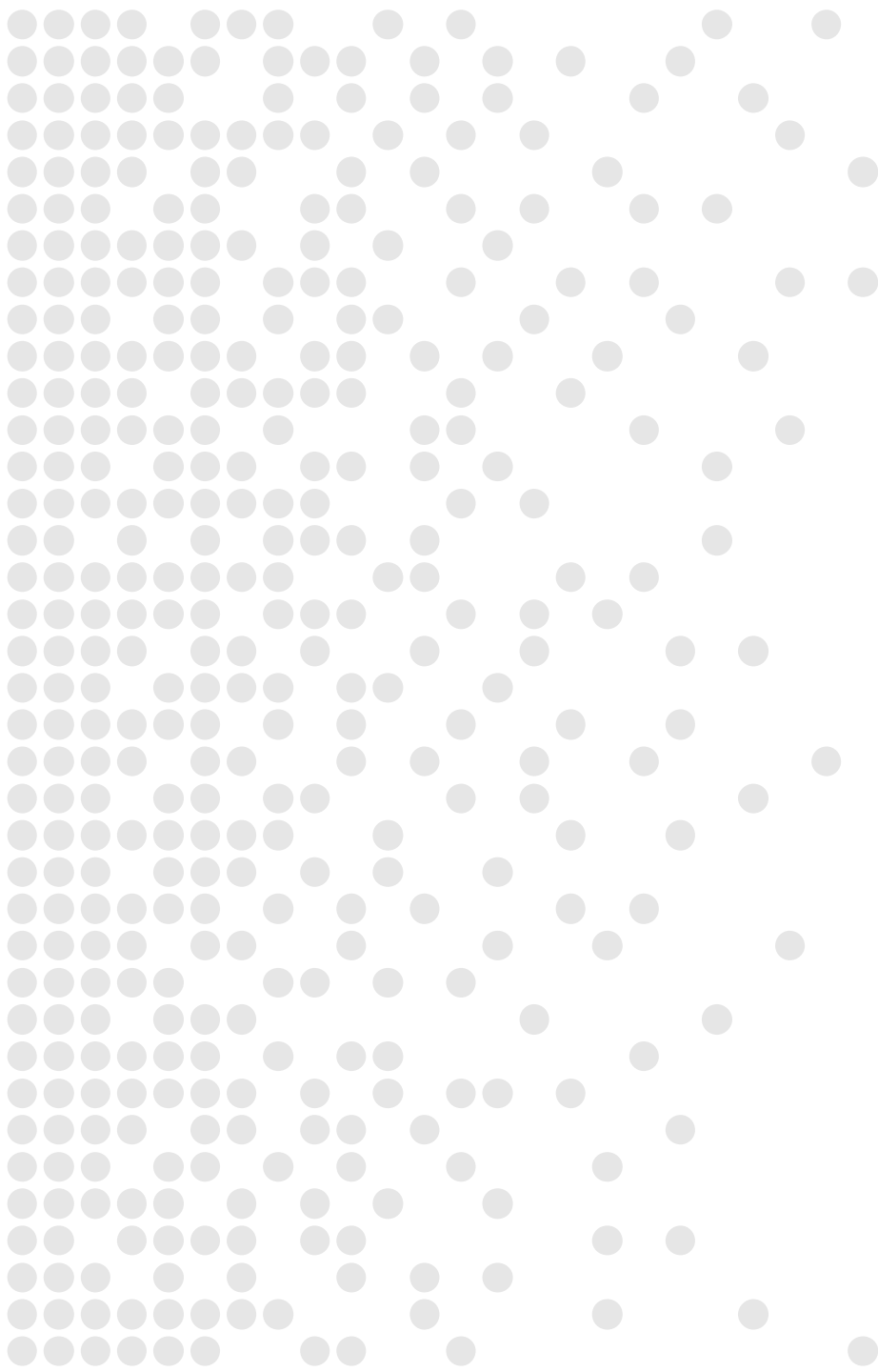
Levels of Service

Stakeholder Engagement

Stakeholder Engagement
Staff

- Engage with a cross-functional group of staff

- Series of workshops

  - Defining LoS

  - Documenting lifecycle activities

  - Reviewing and analyzing data and identifying gaps

Stakeholder Engagement
Council

- Engage early and repeatedly

  - Introduce asset management concepts

  - Levels of Service & Lifecycle Management Strategy elements

  - Financial Impacts and Options

  - Financial Strategy

  - Progress Updates

Stakeholder Engagement
Public

- Considerations

  - How do the stakeholders wish to be engaged?

    - Surveys, public information sessions, dedicated website

  - Scope of the engagement – inform vs. seek input

Generation 2 Asset Management Plans
Key Characteristics

- Asset information

  - Capturing data relevant to the asset management process

- Levels of Service (LoS)

  - Well-defined and directly linked to lifecycle management strategy

- Lifecycle management strategy

  - Includes actual lifecycle activities and captures asset degradation

- Financial strategy

  - Realistic and directly connected to LoS outcomes

- Asset management buy-in and integration

  - Buy-in from stakeholders and integration with strategic objectives & budgets

Questions?

Example 2

Facilities

Levels of Service – Facilities
Overview

Overview of AMP Scope

- 136 buildings and the roads and parking areas for 5 parks

- Current replacement value of $36.4 million

  - Roads and parking account for $11.2 million of this

  - The buildings themselves account for the remaining $25.2 million

  - Buildings range in value from $2.9 million for the administration office to $1,000 for a garden shed

- 40 facilities (82% of total replacement value) were formally assessed in 2018

Levels of Service - Facilities
Developing LoS Framework

Steps in developing LoS framework

1. Identify users and activities that facilities support

2. Identify main types of spaces that support these activities

3. Develop user levels of service for each type of space

4. Choose technical levels of service that will be used to measure whether or not the user levels of service are being achieved

5. Where applicable, identify targets for technical levels of service for different types of spaces or for individual facilities

Sample LoS Framework for Facilities

1. Identify users and activities supported by facilities

Users and activities supported by facilities

Visitor activities	Staff activities
• Hand washing, toileting, and showering • Purchasing food and refreshments • Purchasing souvenirs and retail • Viewing exhibits • Paying park fees; and registering for services • Participating in lectures, activities, programming, and other learning opportunities • Rental facilities • Shelter (inclement weather) • Acquiring information • Visitor staging	• Interacting with park visitors • Doing office work • Doing skilled trades work (e.g., carpentry and auto repair and lift maintenance) • Taking breaks and eating lunch • Storing vehicles, equipment and supplies • Meeting space • Caring for animals • Toileting • Staff staging

Sample LoS Framework for Facilities

2. Identify types of functional spaces and user concerns

- ## Concerns common to all facilities

Major concerns	Minor concerns
- Structural integrity - Absence of health and safety issues - Waterproofing - Functional design - Sufficient capacity - Accessibility	- None

- ## Washrooms

Major concerns	Minor concerns
- Odour free - Hygienic - Effective plumbing	- Aesthetics - Comfortable temperature

Sample LoS Framework for Facilities

2. Identify types of functional spaces and user concerns

- ## Office and Presentation space

Major concerns	Minor concerns
• Aesthetics • Comfortable temperature • Appropriate noise level • Appropriate lighting • Function specific furnishing and equipment	• None

- ## Roads and Parking Lots

Major concerns	Minor concerns
• Potholes (smoothness) • Drainage (Bioswales, permeable surfaces) • Aesthetics	• Parking delineation • Orientation

Sample LoS Framework for Facilities

2. Identify types of functional spaces and user concerns

Concerns of Users - amalgamated

User concerns	
• Absence of health and safety issues	• Functional design
• Accessibility	• Hygienic
• Aesthetics	• Information technology
• Appropriate lighting	• Odour free
• Appropriate noise level	• Orientation
• Comfortable temperature	• Parking delineation
• Drainage (Bioswales, permeable surfaces)	• Potholes (smoothness)
• Effective plumbing	• Purpose-specific furniture
• Function specific furnishing and equipment	• Structural integrity
	• Sufficient capacity
	• Waterproofing

Sample LoS Framework for Facilities

3. Develop user levels of service for each type of space

Summarizing Concerns into User Levels of Service

- Important to identify user needs for each type of space so that future condition assessments can be focused on what affects the users of each space type

- Each of the 20 user concerns could generate numerous customer and technical LoS measures

- Six user LoS measures were arrived at that could capture the full range of needs of facility users

Sample LoS Framework for Facilities

3. Develop user levels of service for each type of space

Community LoS Statements

Level of Service	Description
User experience	The overall experience of users of facilities is acceptable to them.
Likelihood of closure	The likelihood of a space being unusable because of an unanticipated failure is managed based on the importance of the space and availability of alternative facilities.
Minimize lifecycle cost	Repairs and replacement projects identified by staff or contractors that repay their costs over time are made. Examples include timely replacement of roofs to prevent water damage and energy efficiency projects that reduce utility bills.
Health & safety	Users of facilities should not face undue risk to their immediate safety or long-term health.
Capacity	Facilities should accommodate users without undue crowding or wait times.
Accessibility	Facilities should be accessible to people with disabilities.

Sample LoS Framework for Facilities

3. Develop user levels of service for each type of space

Mapping User Concerns to Levels of Service

	Appropriate lighting	Function specific furn. & equip.	Aesthetics	Odour free	Appropriate noise level	Functional design	Information Technology	Road / pathway smoothness	Parking delineation	Parking orientation	Road / pathway drainage	Effective plumbing	Comfortable temperature	Structural integrity	Waterproofing	Health and safety	Hygienic	Capacity	Accessibility
User experience	■	■	■	■	■	■	■	■	■	■	■								
Likelihood of temporary closure									■	■	■								
Minimize lifecycle cost									■	■	■	■							
Health & safety												■	■	■					
Capacity																		■	
Accessibility																			■

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service

- Each of the six user levels of service developed needs at least one associated technical level of service to help identify where goals are not being met

- Not every technical LoS measure currently has the required data to report on outcomes

  - existing data and staff judgement can be used as a proxy to produce a preliminary evaluation of performance

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service – User Experience

- Five-point rating scale used to assess user experience

  - Does not require technical expertise

  - Flexible – does not limit the scope of what might be considered to have an impact on user experience

  - Subjective – People respond differently to building defects. Need to keep this in mind when comparing assessments done by different people and at different times

Rating	Description
1 Very good	Nothing about space detracts from user experience.
2 Good	Minor issues present that have only minimal impact on user experience.
3 Fair	Activities can be performed, but users would prefer to be in better maintained space.
4 Poor	Space is unpleasant to be in or activities need to be modified to be completed.
5 Very poor	pace is barely tolerable to be in or can only support user activities with major effort on the part of the user.

Sample LoS Framework for Facilities
4. Select technical levels of service

Technical Levels of Service – Likelihood of Closure

- Three-point scale to assess likelihood of closure

  - Estimating the probability of a future event such as the unexpected need to close a space is difficult – precision cannot be expected

  - Subjective – Need to keep this in mind when comparing assessments done by different people and at different times

Likelihood of closure		Probability of temporary closure within one year
	1 Low	1 in 20 or lower "Component failure is a surprise"
	2 Medium	1 in 20 to 1 in 5 "Knew of issue, didn't think it was that serious"
	3 High	Greater than 1 in 5 "I told you the component was going to fail"

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service – Minimize Lifecycle Cost

- Backlog of identified projects to reduce lifecycle costs that are carried over from one year to the next

  - Rely on the judgement of experts to recommend projects that reduce lifecycle costs

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service – Health & Safety

- Keeping the list of uncompleted health & safety projects as short as possible

    - Regular inspection of facilities to identify hazards

    - When hazards are identified that are the result of deficiencies of assets, repair or replacement of those assets should be a top priority

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service – Capacity

- Four-point scale of the severity of capacity issues at a facility

  - Assessed on two complementary scales: frequency and impact

  - Addressing capacity issues generally involves major expansions or new construction and is generally addressed as part of a master plan in the context of broader strategic objectives

Rating	Description
0 None	No capacity constraints
1 Low	Capacity issues exist but are infrequent and have low impact on users of a facility
2 Medium	Minor capacity issues are frequent OR there are occasional capacity issues that significantly affect users of a facility
3 High	Capacity issues are common AND significantly affect the users of a facility.

Sample LoS Framework for Facilities

4. Select technical levels of service

Technical Levels of Service – Accessibility

- Dollar value of deferred projects identified in the multi-year accessibility plan

Sample LoS Framework for Facilities

5. Identify targets for technical levels of service

Targets for Technical Levels of Service

Space types	User experience	Likelihood of closure	Capacity
Washrooms - plumbed	2 Good	1 Low	1 Low
Washrooms - vault	3 Fair	2 Medium	2 Medium
Office	2 Good	1 Low	1 Low
Presentation	2 Good	1 Low	2 Medium
Retail	2 Good	1 Low	2 Medium
Gathering - heated	2 Good	1 Low	2 Medium
Gathering - unheated	3 Fair	2 Medium	3 High
Staff food preparation	2 Good	1 Low	1 Low
All other food space	2 Good	1 Low	2 Medium
Operations	3 Fair	2 Medium	1 Low
Animal care & presentation	2 Good	1 Low	1 Low
Storage	4 Poor	2 Medium	2 Medium
Roads	2 Good	1 Low	2 Medium
Parking	3 Fair	1 Low	2 Medium

Sample LoS Framework for Facilities

5. Identify targets for technical levels of service

### Targets for Technical Levels of Service – by facility (sample)

Building	User Experience	Avg of condition 2 - Good 3 - Fair 4 - Poor	Closure Likelihood Has a component in poor condition	Min. Lifecycle Cost Has a component in poor condition	Health & Safety Has a component in poor condition	Capacity Severity/ Frequency of Capacity Issues?	Accessibility Concerns about Accessibility exist
Facility A - Roads and Parking	3.17	Fair (2.5 - 3.5)	No	No	No	2 - Medium	No
Facility A	2.19	Good (1.5 - 2.5)	No	No	No	1 - Low	No
Facility B	2.29	Good (1.5 - 2.5)	No	Yes	No	1 - Low	Yes
Facility C	2.00	Good (1.5 - 2.5)	No	No	No	0 - None	No

Sample LoS Framework for Facilities
Summarize and Communicate Current State

Technical Levels of Service – Current state
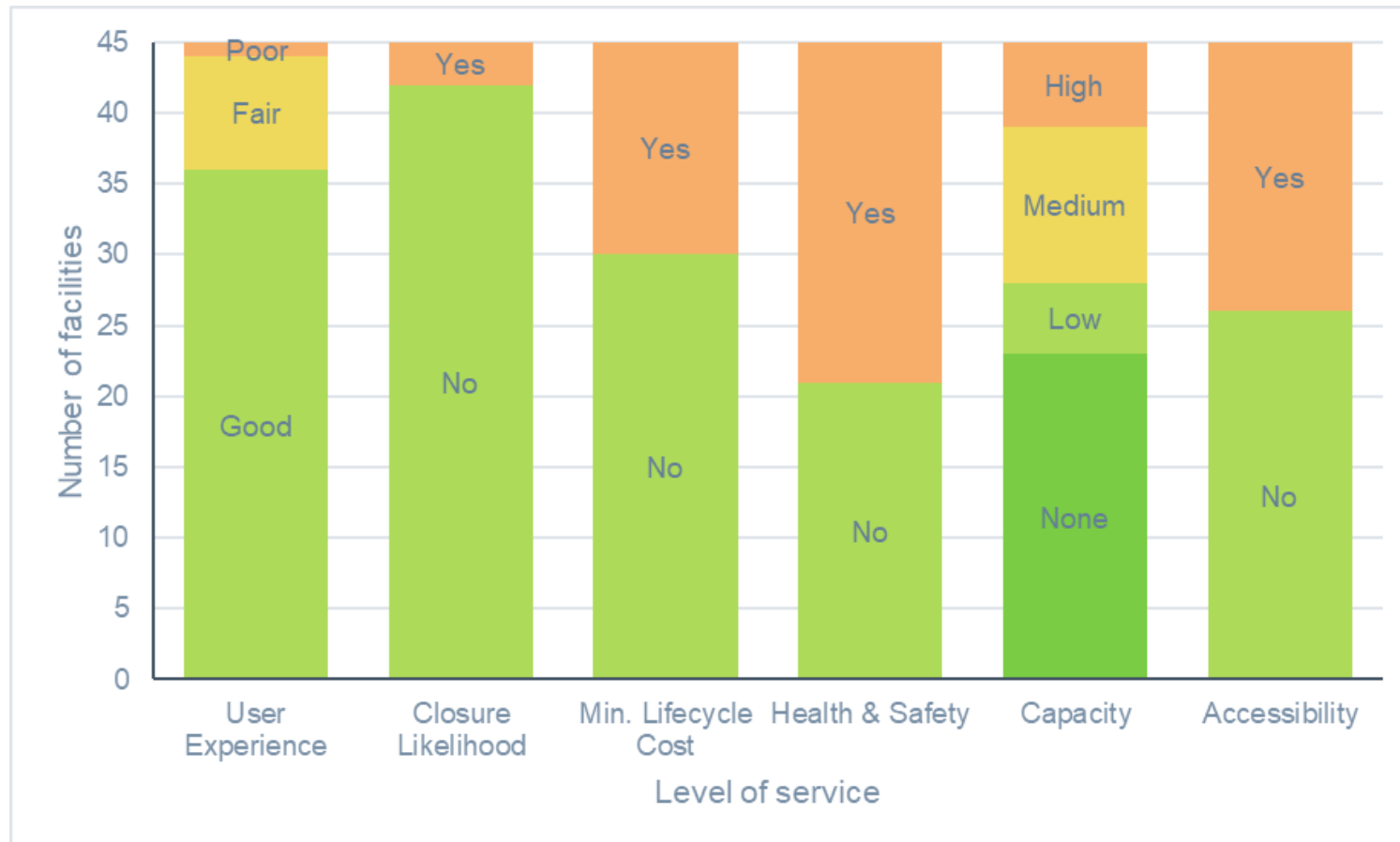
Thank you!

MFOA Resources

MFOA's Guide to Asset Management

• This document was developed to promote best practices in asset management while taking into account Ontario's unique context and legislative framework.

• http://mfoa-amp.ca

A guide to asset management for municipalities in Ontario

ASSET MANAGEMENT FRAMEWORK

MFOA's Self-Assessment Tool

Based on Province's 2012 Building Together – Guide for Municipal Asset Management Plans

General Questions

Asset Specific Questions
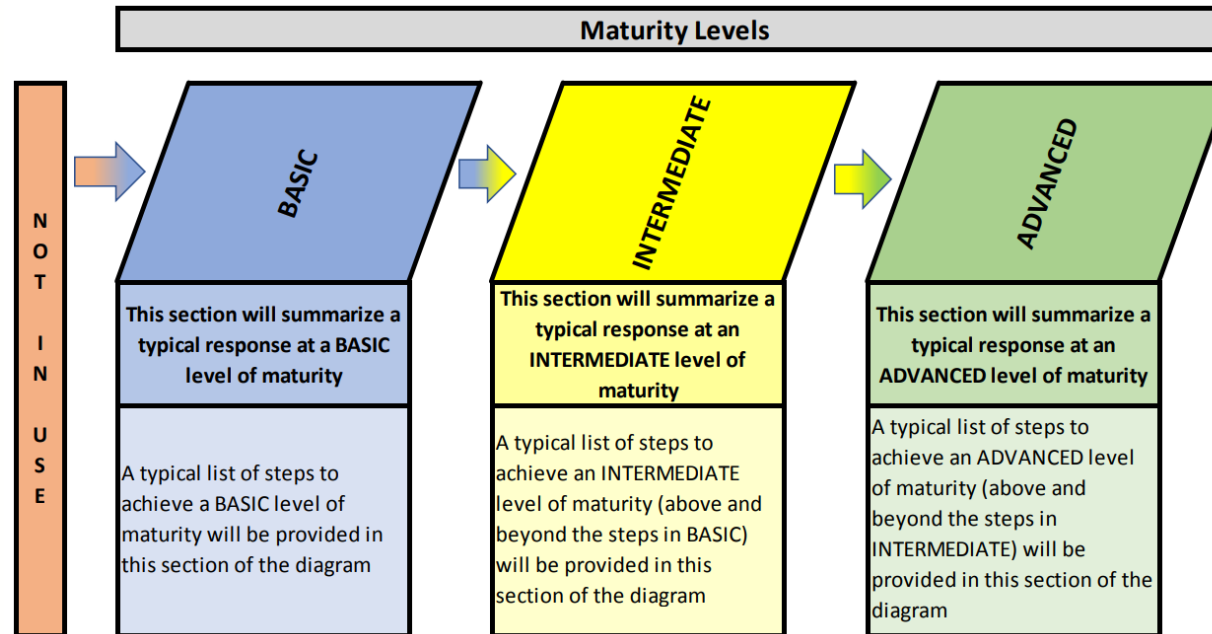
1. Introduction
2. AM Policies and Procedures
3. State of Local Infrastructure
4. Levels of Service
5. Lifecycle Strategy
6. Financing Strategy
7. Making AM Operational
8. Continuous Improvements and Updates
9. AM Tools
10. Internal Governance and Ownership
11. Council Approval and Support
12. Public Engagement and Communication

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Level of Effort vs. Accuracy

- No one-size-fits all approach
- A maturity framework developed as a guide for improvement

- Municipalities will have to decide appropriate level of effort based on:
  – Resources available
  – Risk tolerance

Maturity Levels

NOT IN USE

BASIC

This section will summarize a typical response at a BASIC level of maturity

A typical list of steps to achieve a BASIC level of maturity will be provided in this section of the diagram

INTERMEDIATE

This section will summarize a typical response at an INTERMEDIATE level of maturity

A typical list of steps to achieve an INTERMEDIATE level of maturity (above and beyond the steps in BASIC) will be provided in this section of the diagram

ADVANCED

This section will summarize a typical response at an ADVANCED level of maturity

A typical list of steps to achieve an ADVANCED level of maturity (above and beyond the steps in INTERMEDIATE) will be provided in this section of the diagram

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AMP It Up 2.0

- Direct support
- Funded by the Province and MFOA
- Experts will review your plan
- Our teams have finance and engineering expertise
- Identify gaps
- Develop "next steps" work plan that you can manage with the resources you have
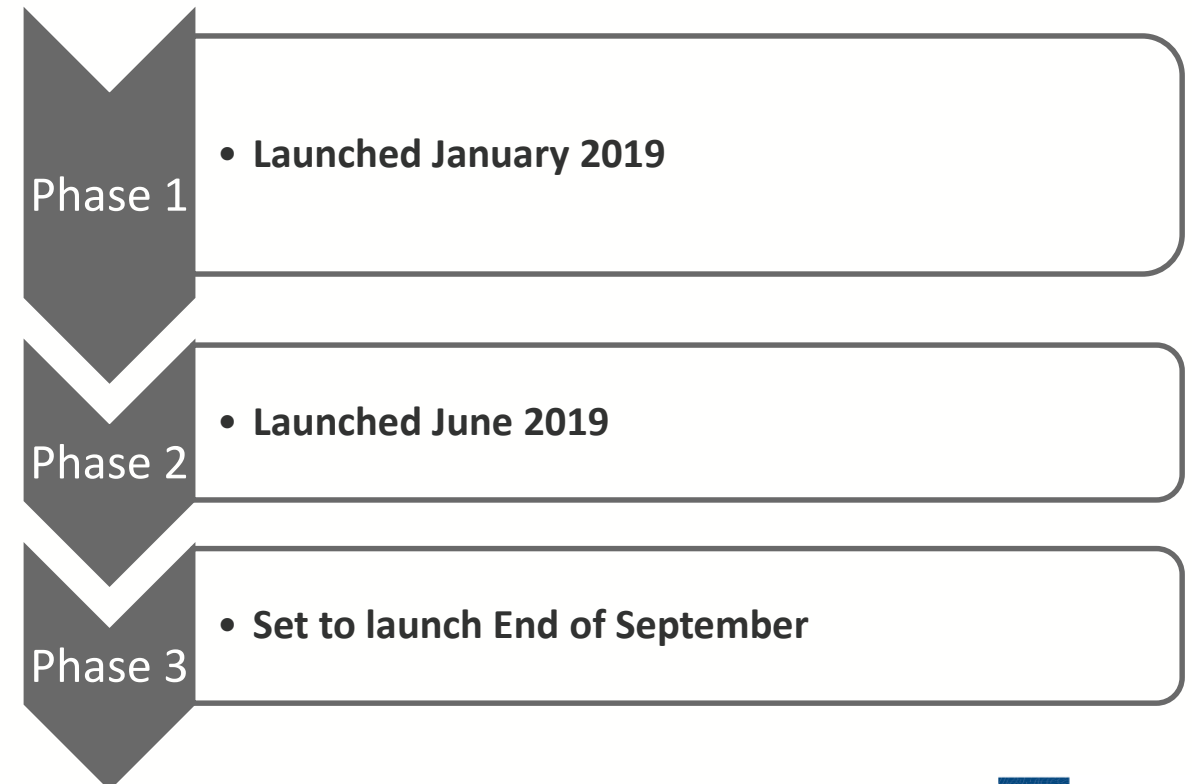
Municipalities in AMP It UP
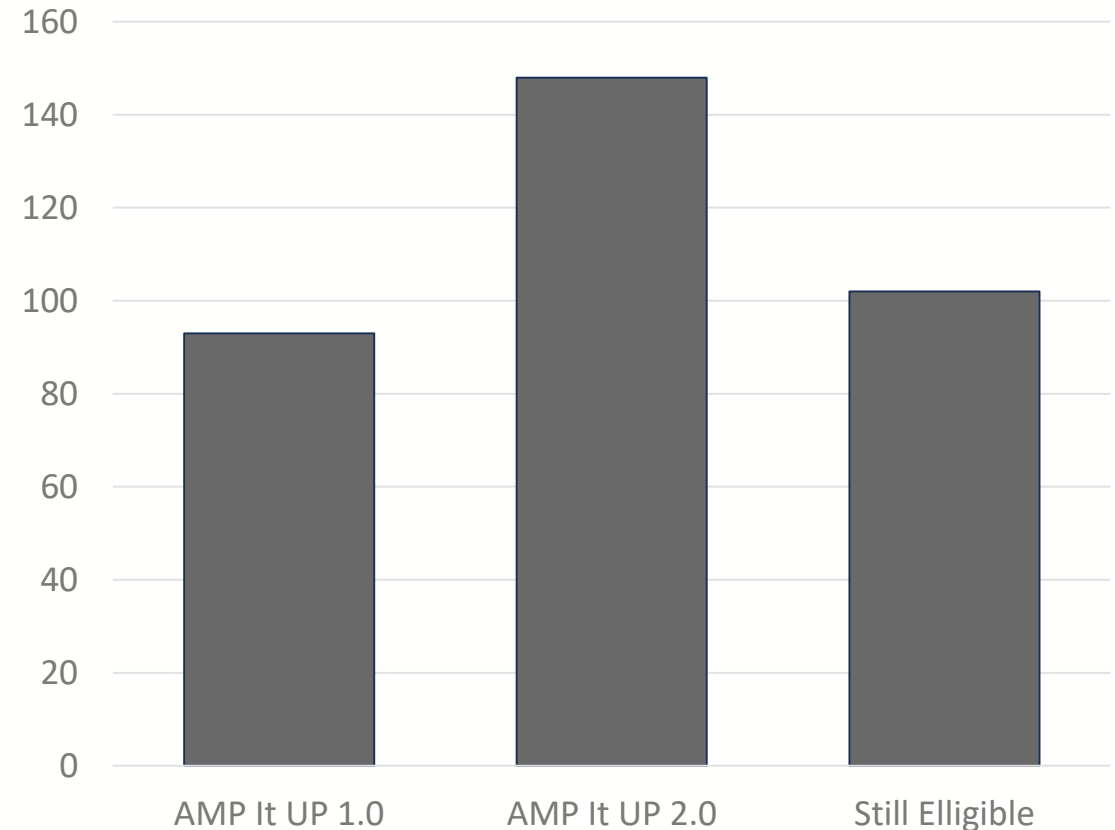
AMP It Up 2.0

Eligibility

- Available to municipalities with populations less than 25,000 that did not participate in AMP 1.0

- Eligible municipalities will receive invite to participate in phased approach (based on population size)

Timelines

Phase 1
- Launched January 2019

Phase 2
- Launched June 2019

Phase 3
- Set to launch End of September

Resources

Access under the 'Asset Management' tab on the MFOA homepage

Asset Management Resources

In partnership with Asset Management Ontario, the Asset Management Resources webpage is a central source for important documents, videos, and policies related to asset management. Based on the 12 sections of MFOA's asset management Self-Assessment Tool (SAT), the resources on this page have been carefully selected to suit your municipality's asset management needs.

How to Use

To the right of your screen are all the documents available on our Resource page. Each resource includes a date of publication, author information, and a brief description. Click on the title to access the document.

To filter the resources, select items on the left by checking off characteristics of the resource you are looking for. The results of your search will appear on the right.

Subject Area

MFOA Self-Assessment Tool Chapters
- ☐ Introduction
- ☐ Policies
- ☐ State of Local Infrastructure
- ☐ Levels of Service
- ☐ Lifecycle Management Strategy
- ☐ Financing Strategy
- ☐ Making AM Operational
- ☐ Updates and Improvements
- ☐ Tools
- ☐ Internal Governance
- ☐ Council Approval and Support
- ☐ Public Engagement

IAM Subjects
- ☐ Organization and People
- ☐ Strategy and Planning
- ☐ AM Decision Making
- ☐ Lifecycle Delivery
- ☐ Risk and Review
- ☐ Asset Information

Starting the asset management conversation with your municipal council (2018-10-01)

This resource is a communication tool (presentation) that is ready to use as-is. It includes slides and speaking notes that can be personalized to you community's needs and a particular

Show more...

Asset Management: Infrastructure in Small Communities (Video), (2018-05-01)

This resource is a video hosted on YouTube. It provides a mayor's point of view on the value of asset management to his community in enabling it to face the many challenges small

Show more...

Strategic Asset Management Policy Toolkit (2018-04-01)

This resource provides foundational guidance and information to municipalities to support Policy development and implementation aligned with O.Reg. 588/17. It includes: - Scalable

Show more...

Asset Management Communities of Practice Guide (2018-04-01)

This resource is intended to assist municipal staff in developing and maintaining their own communities of practice to best meet their needs in developing and sustaining effective asset

Show more...

Leveraging Asset Management Data for Improved Water Infrastructure Planning (2018-01-01)

The document is a national study of municipal asset management sata and information practices, that includes interviews with municipal employees involved in asset management

Show more...

Asset Management 101: The What, Why, and How For Your Community (2018-01-01)

MFOA Resources
Asset Management Roadmap 2.0

- Augments MFOA's SAT, Guide and Maturity Framework by connecting theory to practice
- Revisits core concepts while sharing challenges and lessons learned from implementation
- Just in time training will ensure that all topics are covered in the order you need them most

COMPREHENSIVE COURSE CALENDAR COMING SOON!

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Select Partner Resources

FCM Municipal Asset Management Program (MAMP)
- Recently renewed $60M program
    - Includes direct funding to municipalities
- Many ready-to-use resources, including:
    - Council education presentation
    - 2-page tip-sheet on buying AM software

AMOntario
- Municipal Metrics (LOS) Catalogue
- https://amontario.ca/wp-content/uploads/2019/05/20181119_MunicipalMetricsCatalogueV1.pdf

Municipal Metric Catalogue

Municipal Metric Catalogue

AMONTario
ASSET MANAGEMENT ONTARIO

Service Area: **Generic**   Asset: **Non-Specific**

# of days to repair defect

Description: A running average number of days between identification of defects and their resolution.

Category: **Technical**   Type of Metric: Lagging

Inputs to Metric: Time tracking of individual defects identified by inspectors (and/or public) and recording date of resolution.

Suitability as a LOS Metric: High

Interpretation of Metric Values: A high number represents a longer period of time - however, that is only relevent in context of response expectations set by the organization, by regulation, or by service agreements.

Impact on Customer Values:
- ☑ Public Safety
- ☑ Quality of Service
- ☑ Availability of Service
- ☐ Capacity to meet Demand
- ☑ Reliability of Service Delivery
- ☐ Sustainability of Service Delivery
- ☐ Impact on Environment
- ☐ Impact on Climate Change
- ☐ Impact on Social Well Being

Recommended Uses: Measure of ability to respond to defects. Best used when management has on ongoing practice of monitoring defects in terms of severity, response expectation compliance, and running total of identified defects.

PROS

A good way to monitor overall workload of resources as the number will slip quickly if workload is higher than available resources.

CONS

A difficult number to report and monitor unless a comprensive work order system has been implemented.
The number itself must be compared to organizational or regulatory expectations.
The metric is reported as an average - response to individual defects may be much higher and present a hidden risk.

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Questions?

- Andrew Grunda, Principal, Watson & Associates

- Peter Simcisko, Manager, Watson & Associates

- Colin Macdonald, Manager – Investment Services, MFOA

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