

Best Practices in Asset Management

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Agenda

Working through the goals of
Asset Management

- Introduction and PSD Overview
- Overview: O.Reg 588 and the *purpose* of asset management
- What are the goals of a municipality?

Breakout Activity

- Discussion: What is your Stanley Cup?

Municipal Presentation: Town of
Huntsville

- Risk and lifecycle: A municipal example of how these practices can assist with long-term planning

Municipal Presentation: Town of
Caledon

- The importance of data in long-term planning

Level of Service Review
& Breakout Activity

- Discussion: Levels of service

Concluding Thoughts

About Us

ENTERPRISE ASSET MANAGEMENT & BUDGETING



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RESEARCH

- Public Sector Digest
- Applied Research
- Policy Analysis & Grant Services

CONSULTING

- Asset Management Training
- Asset Management Plan & Program Development
- Climate Change Adaptation Plans

SOFTWARE

- Enterprise Asset Management (EAM)
- CMMS & GIS
- Enterprise Budget Management

2019 MFOA Theme: Navigating Through Uncertainty



Building a Mature Asset Management Program

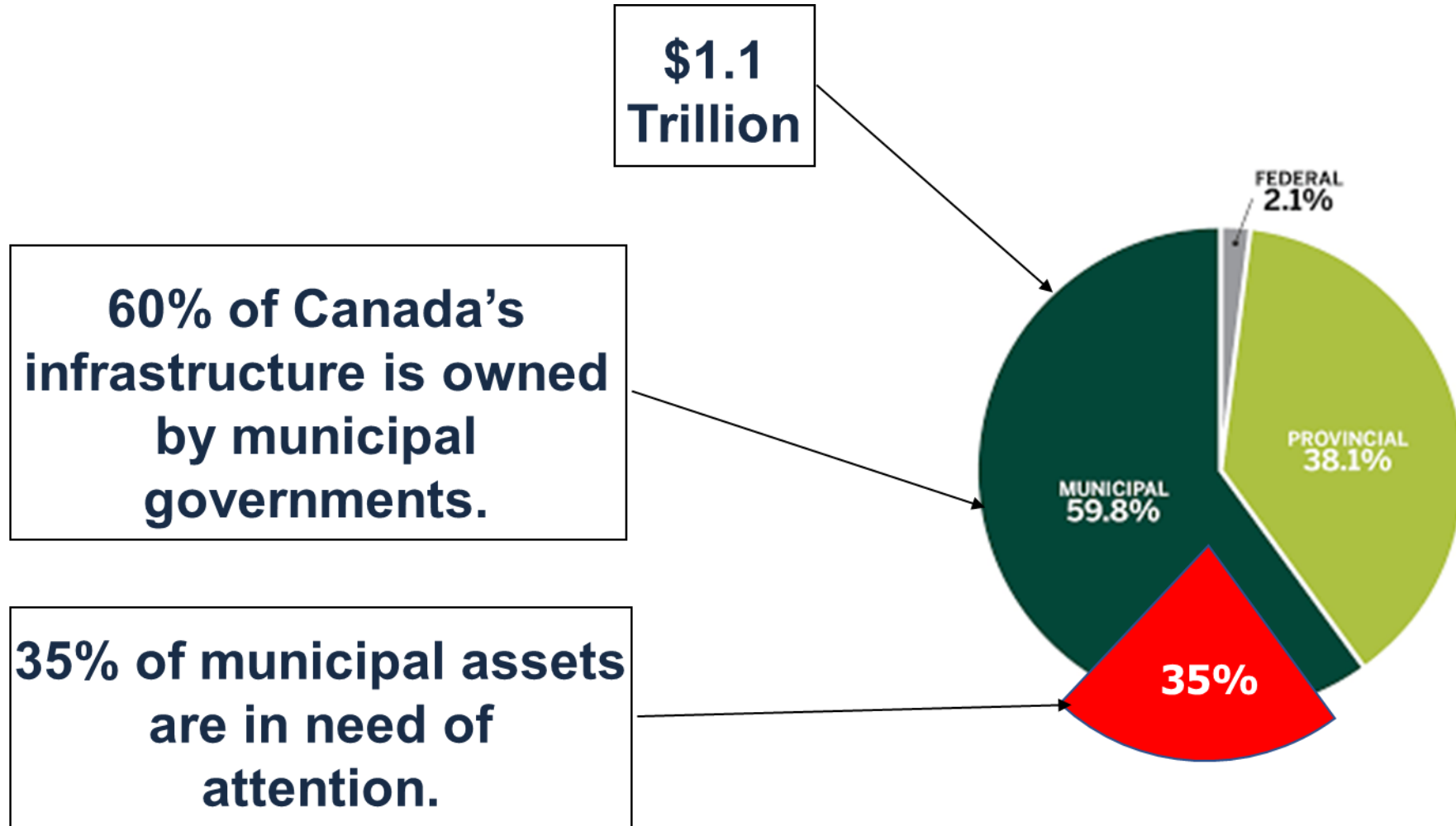
- What components should be addressed?
- What should be done first?
- How do we ensure O.Reg compliance?
- Who should be involved?
- How do we communicate?



Building Context: Asset Management and O.Reg 588



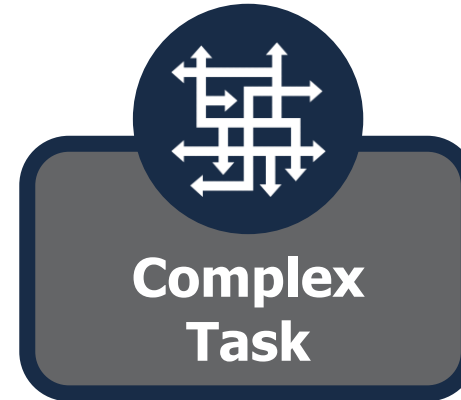
The Context



Barriers



Lack of resources (Time, Money, People) make assessing, and sustainably managing, your current asset portfolio difficult.

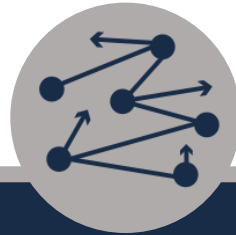


Consequences

This process is complex and if not tackled strategically can have severe repercussions on a municipality.



**Poor Data =
Knowledge Gaps**



**Misalignment = Poor
Direction**

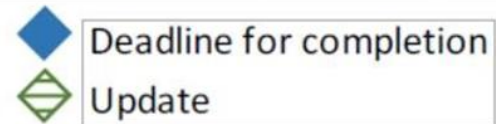
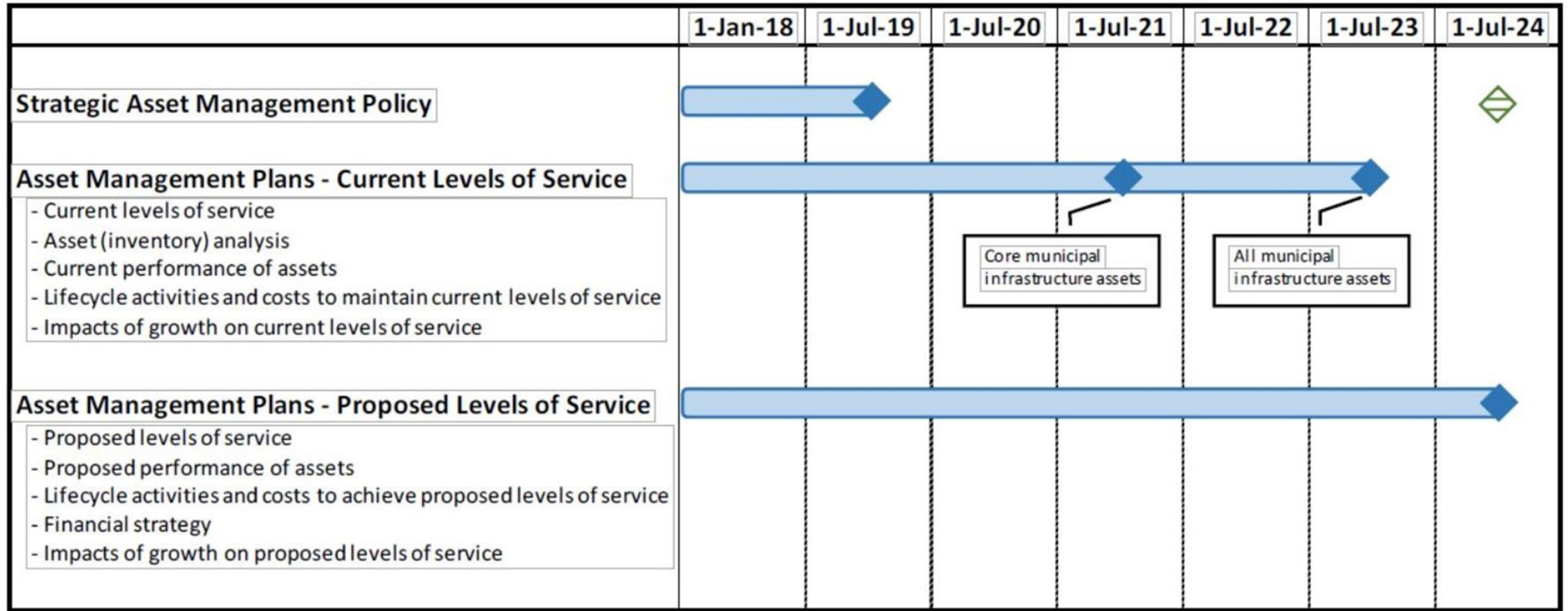


**Future Services =
Disruption / Failure**

O.Reg 588/17: Building Sustainable Asset Management Practices



O.Reg 588/17: Deadlines & Expectations



Key Requirements:

2021/2023 Asset Management Plans

2021: CORE Assets

2023: ALL Assets

1. Current Levels of Service defined
2. Current performance of each asset category
3. Detailed inventory: summary of the assets, replacement costs, average age of the assets, available condition information, and a description of the approach to assessing the condition of assets
4. Estimated cost and life cycle activities to maintain current levels of service & documented associated risks
5. Growth - municipalities less than 25,000: assumptions regarding future changes in population or economic activity
6. For municipalities with a population of 25,000 or greater: population and employment forecasts and forecasted growth projects

Key Requirements:

2024 Asset Management Plan

1. Proposed Levels of Service (including a 10-year plan)
2. An explanation of why the proposed levels of service are appropriate for the municipality (including associated risks)
3. The proposed performance of each asset category (for a 10-year period)
4. A Lifecycle Management and Financial Strategy (including risks)
5. For municipalities with a population of less than 25,000: a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy
6. For municipalities with a population of 25,000 or greater: the estimated capital expenditures and significant operating costs to achieve the proposed levels of service

Key Requirements:

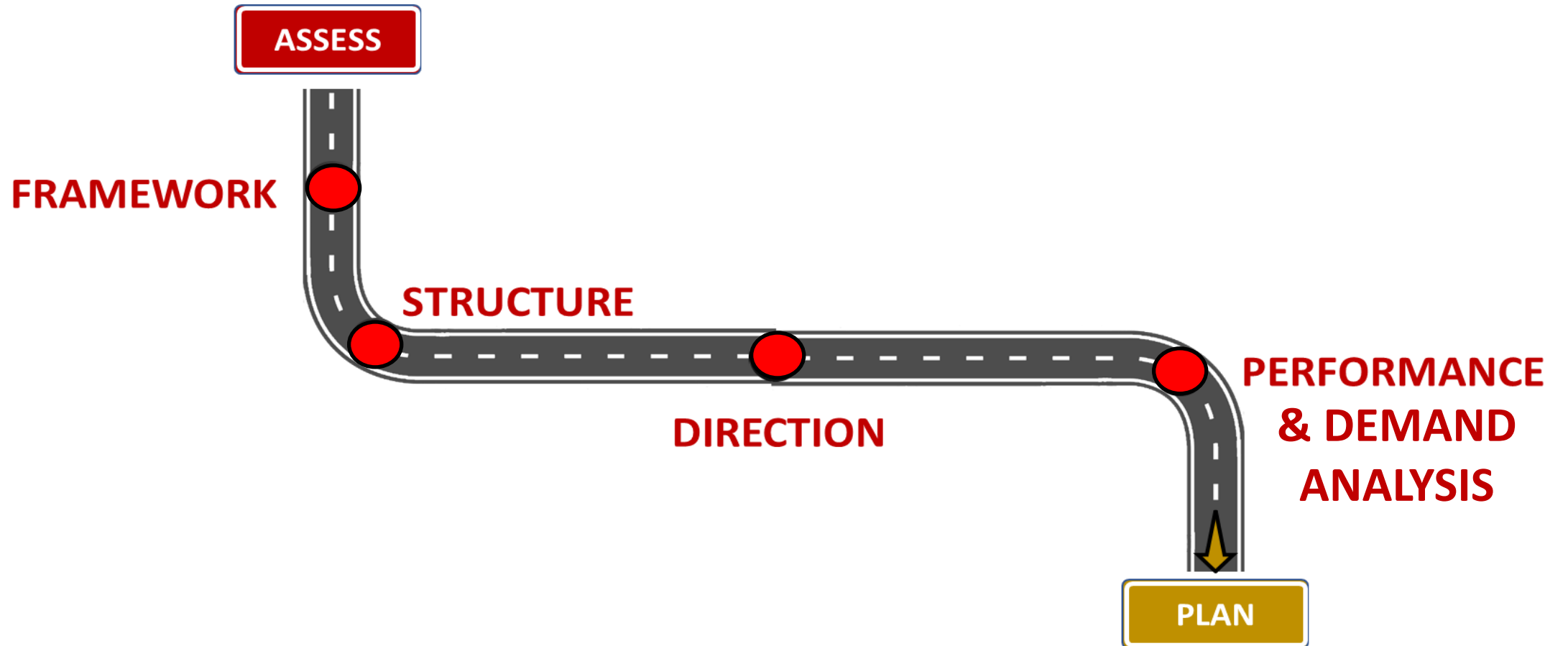
Annual Review and Public Posting



- Every municipal council shall conduct an annual review of its asset management progress before July 1 in each year, starting the year after July 1, 2024
- Every municipality must post its current strategic asset management policy and asset management plan on a website that is available to the public

Asset Management Program Development

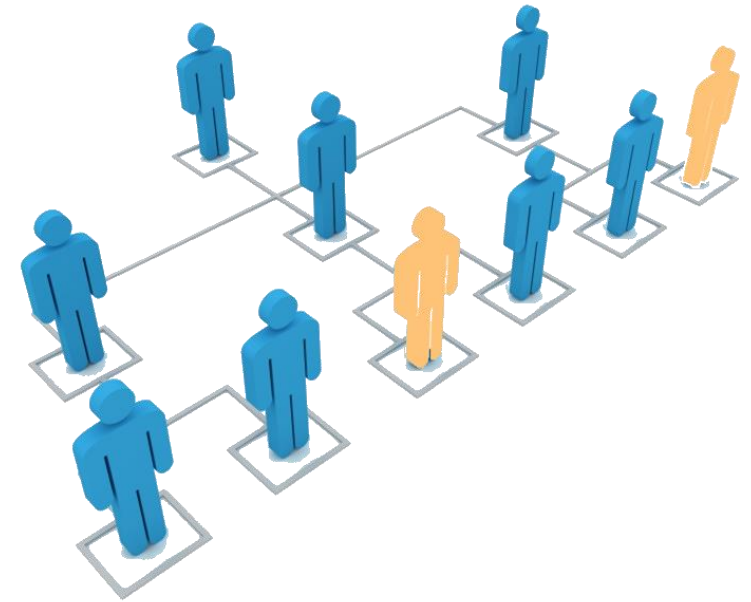
Assess | **Plan** | **Implement**



Structure

- AM Champion
 - Influential leader
- AM Steering Committee
 - Decision Makers
 - Finance, Engineering, GIS, Facilities, Public Works, Fleet, Planning, etc.
- AM Coordinator
 - Monitors and governs all aspects of the program
- AM Team
 - Dedicated staff meet and discuss the AM Program regularly

Organizational Overhaul



Direction

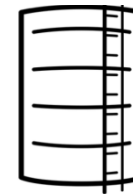


- Asset Management Maturity Assessment
- Systems Maturity Assessment
- Data Maturity Assessment

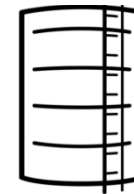
Asset Management Data

- Completeness
- Consistency
- Accuracy
- Integrity
- Uniqueness

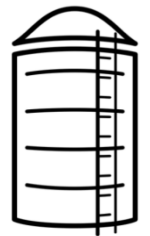
Data Folk



Engineering Folk



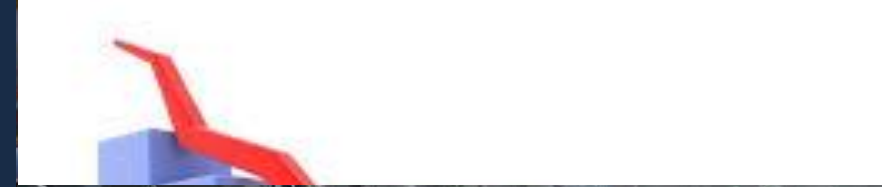
Finance Folk



Performance & Demand Analysis

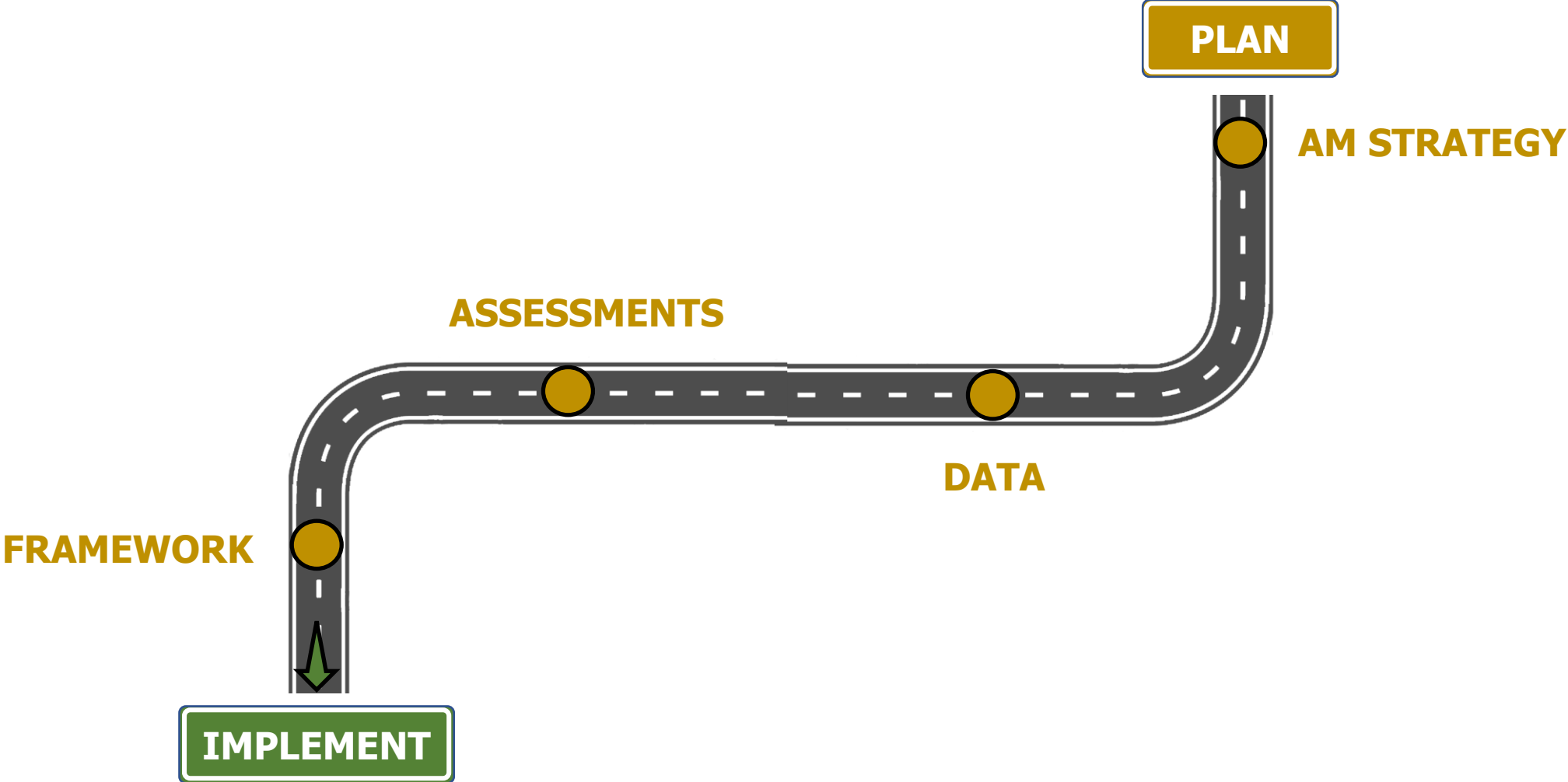
Challenges

- Aging Infrastructure
- Future Infrastructure Demand
- Declining Senior Gov't Grants
- Extreme Weather & Climatic Changes



Asset Management Program Development

Assess | **Plan** | **Implement**



Plan

Asset Management Strategy

Prioritize

- Data Collection & Enrichment Process
- Condition Assessments
- Asset Management Framework
 - Risk Analysis Framework
 - Lifecycle Management

Every successful plan starts with a strategy



100% complete in one is better than 50% in all



Risk Analysis Framework

What attribute data is available?

Which impact will the attribute data contribute to?

➤ **Probability of failure**

- Condition
- Deterioration Acceleration
 - Climatic Impacts
 - Infrastructure Demands

➤ **Consequence of failure**

- Economic
- Social
- Environmental
- Operational
- Health and Safety
- Strategic

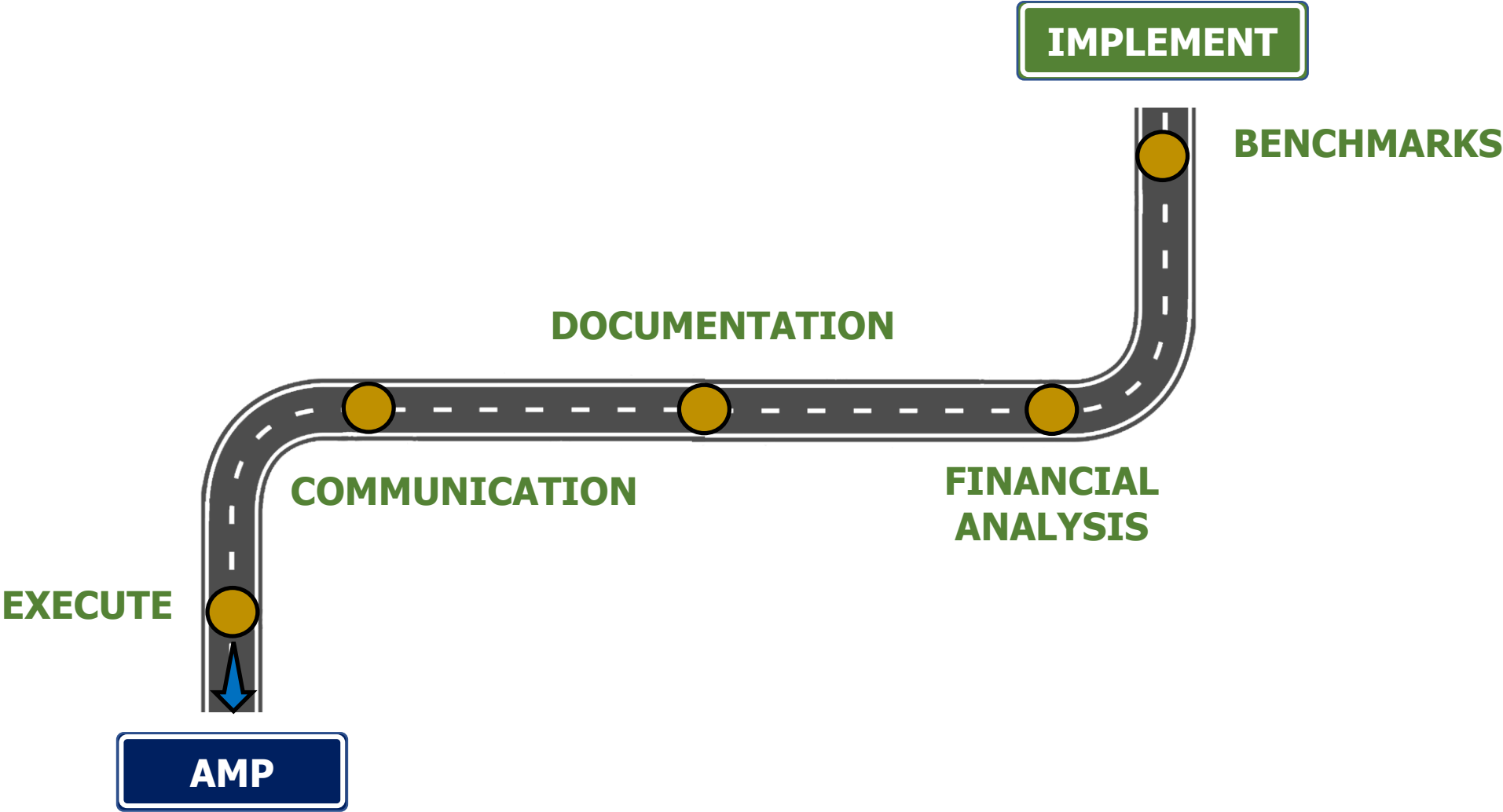


Life Cycle Management Development

Event Class	Description	Example	Cost
General Maintenance	Any activities that repair current defects or deteriorations	(Roads) Pothole Repairs	\$
Preventative Maintenance	Any activities that prevent defects or deteriorations from occurring	(Roads) Crack Seal	\$
Rehabilitation	Any activities that rectify defects or deficiencies that are already present and may be affecting asset performance	(Roads) Mill & Resurface	\$\$
Replacement	Asset end-of-life activities that often involve the complete replacement of assets	(Roads) Full Reconstruction	\$\$\$
Replacement Upgrade	Asset end-of-life activities that involve the complete replacement of assets with an upgraded asset	(Roads) Reconstruct from LCB to HCB surface composition	\$\$\$\$

Asset Management Program Development

Assess | **Plan** | **Implement**



Building Context: Goals of a Municipality

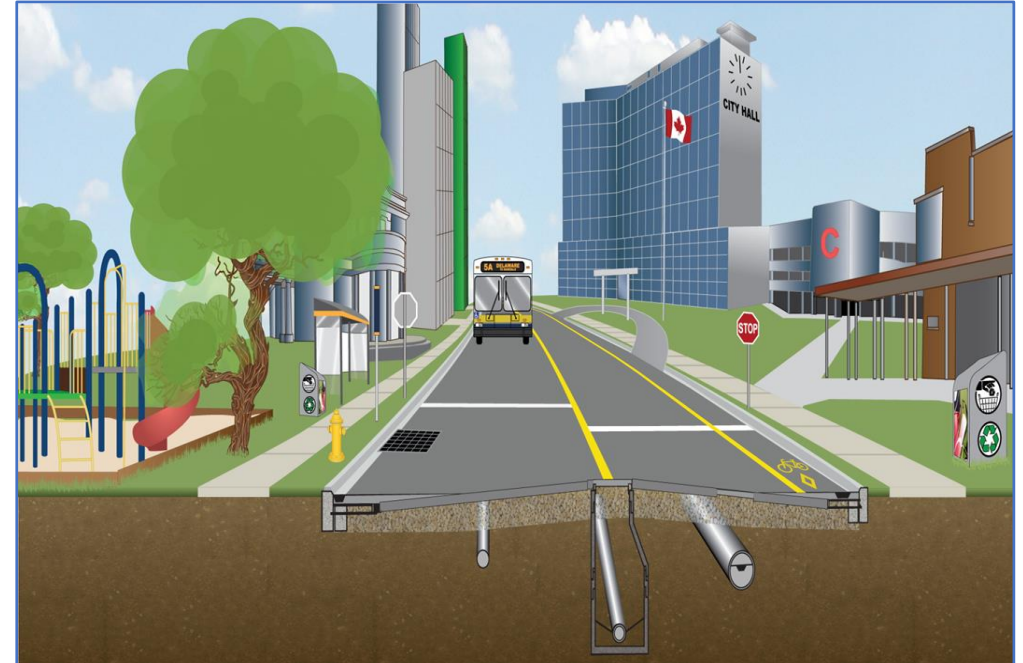


Many Asset Management Presentations Lately....



Sustainability: What does it mean for your municipality?

- Is it being a “happy, healthy and prosperous community?”
- Surprisingly, we have yet to find a municipality striving to be “sad, dark, polluted, and crime filled.”



Sustainability: Asset Management and Sustainability

- How can asset management help your ***organization*** realize sustainability?
- ISO 55000 definition of asset management:
“Coordinated activity of an organization to realize value from its assets.”

More than just your organization are seeking to be sustainable, why don't we look at it from a different angle...



Guiding Principals of Asset Management: From the Perspective of a Hockey General Manager

- **What do we own and where is it?** Marner, Matthews, Nylander, Anderson, etc.
- **What is it worth?** \$95 million
- **What condition is it in?** Let's think about that...injuries, performance, expected useful life (contract length), remaining EUL, projected performance, etc.
- **What do we need to do to it?** Training, diet, physical therapy
- **When do we need to do it?** Player dependent (some do different things for the team meaning they need to focus on different areas)
- **How much money do we need?** Player salaries, staff, travel expenses, etc.
- **How do we achieve sustainability?** Choosing the right players and the right training regiments at key times throughout their careers
- **Do we still need it?** Jake Gardiner, etc.
- **How do we maintain sustainability?** Continual maintenance and understanding of the team environment

Video: "Sustainably Managing Your Assets"



https://www.youtube.com/watch?v=iR_BJKAo0dA

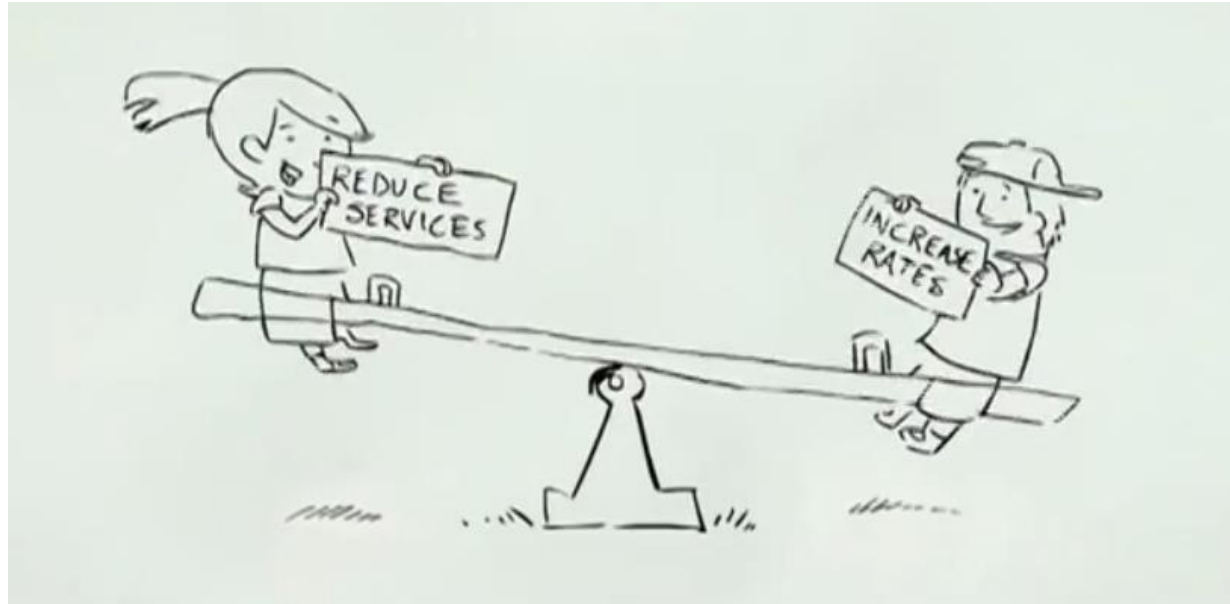
Bringing in Innovation: Scorched Earth Theory



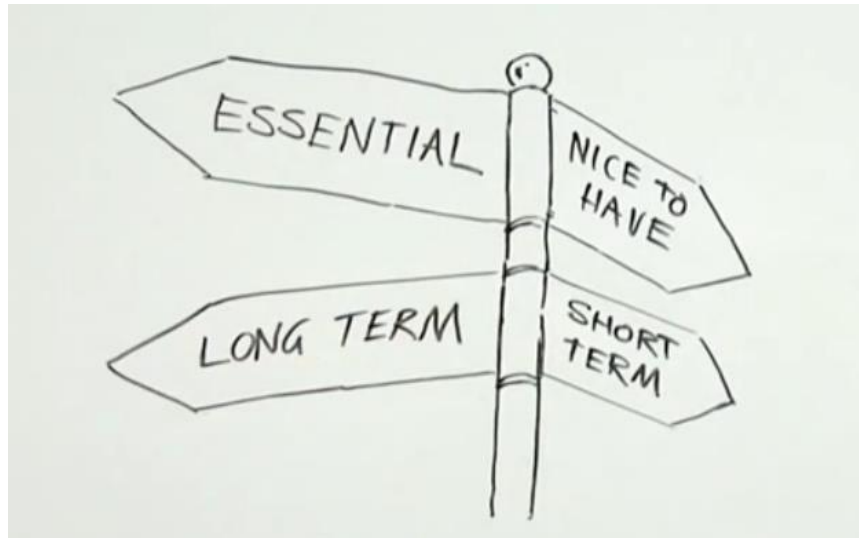
- When an organization is not running sustainably, it is important to bring in new and innovative ideas in order to establish new processes that work towards their ultimate goal (whether that be winning the Stanley Cup or sustainable service delivery).

Defining What is Most Important

- Tough choices: Increase rates vs. reducing services



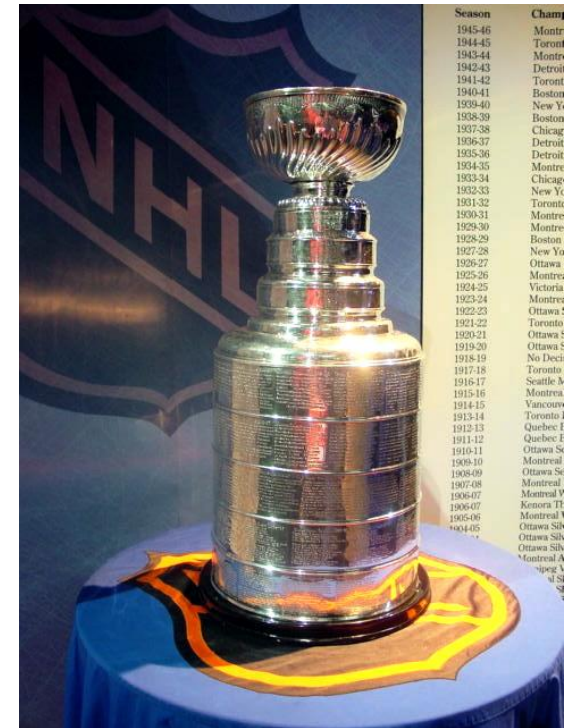
- What is an essential service vs. what is nice to have?
How do you define this?



Breakout Activity



- What is the ultimate goal of your municipality i.e. what is your Stanley Cup?
- Are you proactive or reactive when it comes to planning?
- What is considered essential vs. what is nice to have?

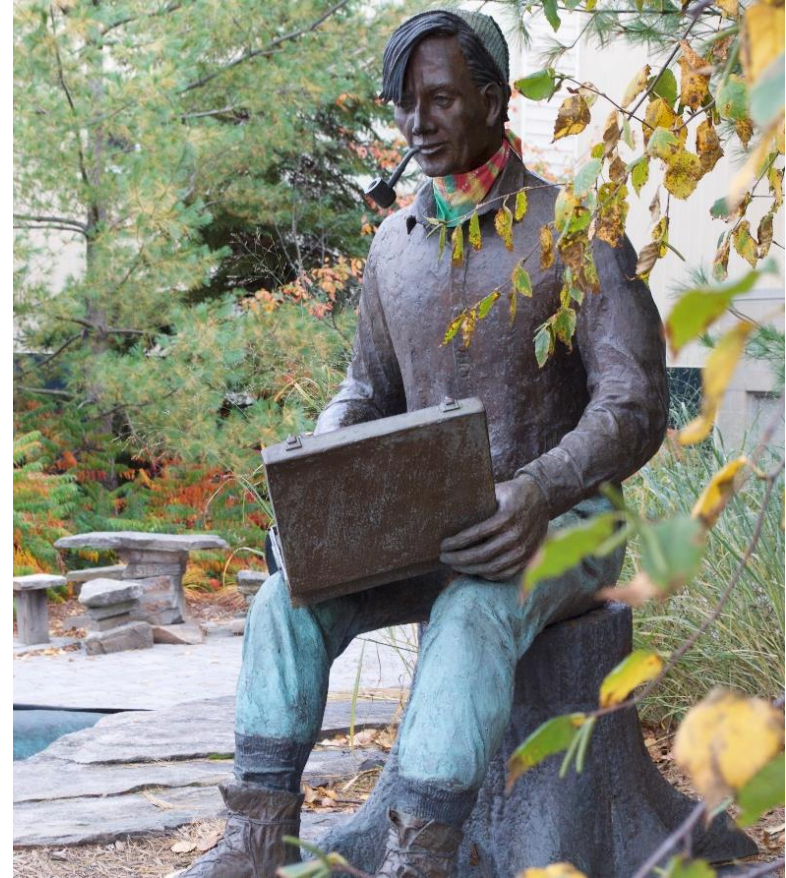


Asset Management Practices in Huntsville



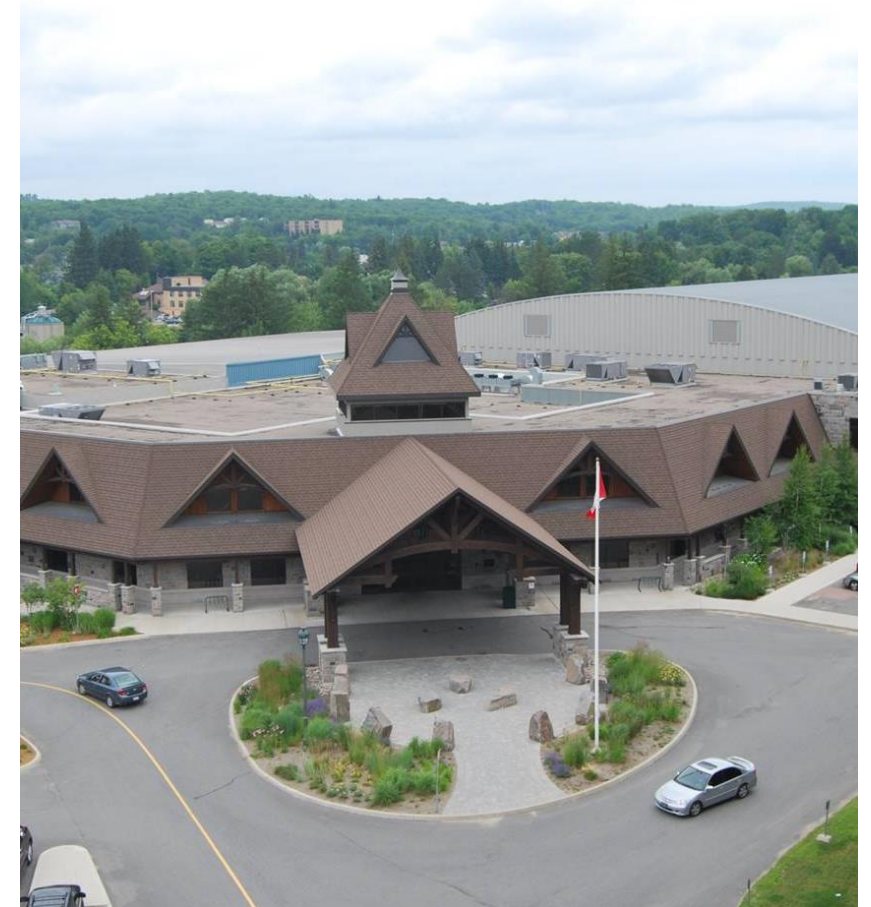
Community Profile

- Population: 19,816
- Largest Community within Muskoka
- Seeing approximately 1% growth annually
- Major Industry: Tourism, Construction and Light Manufacturing

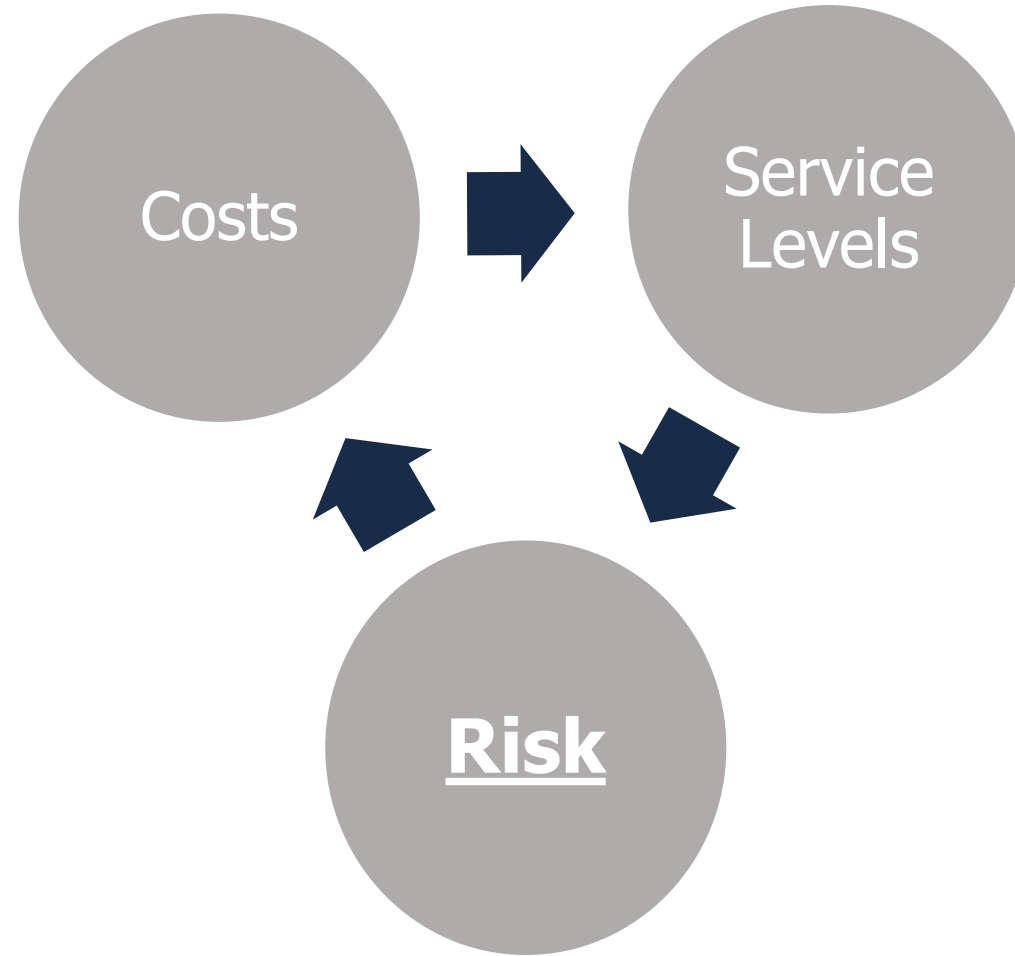


Community Profile

- Interesting Facts:
- Hosted 2010 G8 Summit
- Transitioning from resource based economy towards knowledge based community
- Identified by National Geographic as one of the 10 best summer trips
- Undertaking Downtown revitalization project with Capital and infrastructure improvements 2021



What Information is Required for Good Asset Management?



Asset Management and Service Delivery

- Which services are the most important?
- Which assets provide these services?
- What is their condition?
- Which assets are critical?
- Is our investment in new and existing infrastructure balanced?
- Are the existing service levels sustainable?
- What information is missing?
- What do we need to do?



Huntsville's Management Strategy

- Step 1: Build a complete asset inventory
- Step 2: Develop a risk assessment framework
- Step 3: Identify asset risks
- Step 4: Incorporate Life Cycle Management
- Step 5: Inform Council Decision-Making



What Infrastructure Services Huntsville Provides



Roads
Streetlights
Curb & Gutter
Signs
Guideposts



Structures
Roof
HVAC Systems
Flooring
Pool
Ice plant



Playgrounds
Parking Lots
Landscaping
Sports Fields
Docks
Basket Ball Courts
Boat Rams



Building Asset Inventory: Data Collection

- ***Physical asset data*** — what assets are owned/operated and what are their technical characteristics?
- ***Relationships*** — how are assets related to each other?
- ***Work Management Data*** – what maintenance work has been /will be performed?
- ***Performance Data*** — how does assets contribute to the quality of services we provide?
- ***Condition Data*** – What are the chances of an asset failing?
- ***Cost Data*** – how much does the asset cost to buy and operate?
- ***Asset Classification and Hierarchy*** – how assets are classified and what community services they provide?





Developing a Risk Assessment Framework

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Risk Assessment Framework

- Risk = Likelihood of asset failure x Consequence of asset failure

		1	2	3	4	5
Consequence	25	Moderate	Moderate	High	Very High	Very High
	20	Low	Moderate	High	High	Very High
	15	Low	Moderate	Moderate	High	High
	10	Low	Low	Moderate	Moderate	Moderate
	5	Low	Low	Low	Low	Moderate

- Need to develop a risk assessment framework for key asset types



Risk Assessment Framework – Likelihood of Failure

Likelihood	Asset Evaluation
Rare < 10%	<ul style="list-style-type: none"> - Very good condition. - May be new or almost new (say >80% remaining useful service life). - Functionality/capacity meets or exceeds current service requirements.
Unlikely 10% - 30%	<ul style="list-style-type: none"> - Good condition. - Greater than half of remaining useful service life (say 60% - 80%). - Functionality/capacity fully meets current service requirements.
Possible 30% - 50%	<ul style="list-style-type: none"> - Fair condition - About half or less than half of remaining useful service life (say 40% -60%). - Functionality/capacity meets most minimum service requirements
Likely 50% - 90%	<ul style="list-style-type: none"> - Poor condition. - Near end of remaining useful service life (say <40%). - Functionality/capacity periodically below or significantly less than minimum service requirements.
Almost Certain >90%	<ul style="list-style-type: none"> - Very poor condition. - At or beyond remaining useful service life. - Functionality/capacity periodically or completely falls below minimum service requirements.



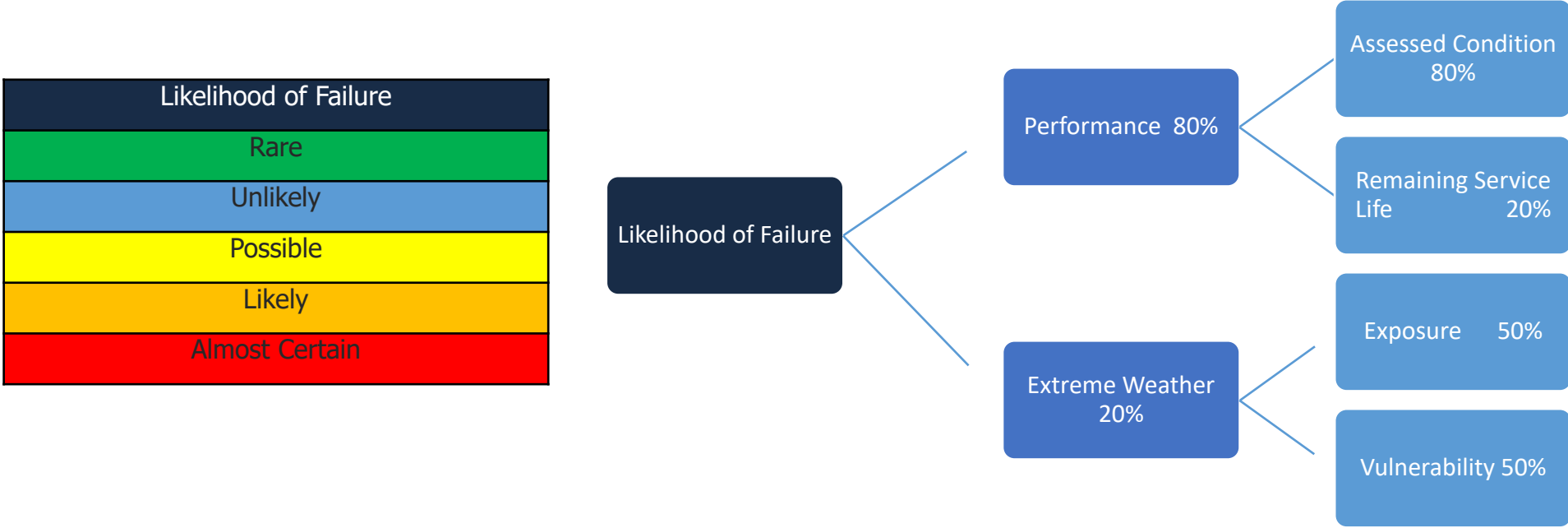
Risk Assessment Framework – Consequence of Failure

	Economic	The monetary consequences of asset failure for the organization and its customers
	Social	The consequences of asset failure on the social dimensions of the community
	Environmental	The consequence of asset failure on an asset's surrounding environment
	Operational	The consequence of asset failure on the Town's day-to-day operations
	Health and Safety	The consequence of asset failure on the health and well-being of the community
	Strategic	The consequence of asset failure on strategic planning



Risk Assessment Framework – Roads Example

- Example: Roads Probability of Failure**



Risk Assessment Framework – Road Example

- Performance
 - Condition Assessment
 - Estimated Useful Life
 - Asset Level
- Extreme Weather
 - Exposure to extreme weather
 - Vulnerability of the asset
 - At the asset class level



Risk Assessment Framework – Road Example

- Economic
 - Replacement Cost
 - Roadside Environment
- Social
 - AADT
 - Design Class





Identify Asset Risks

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Identify Asset Risks



Identify Asset Risks

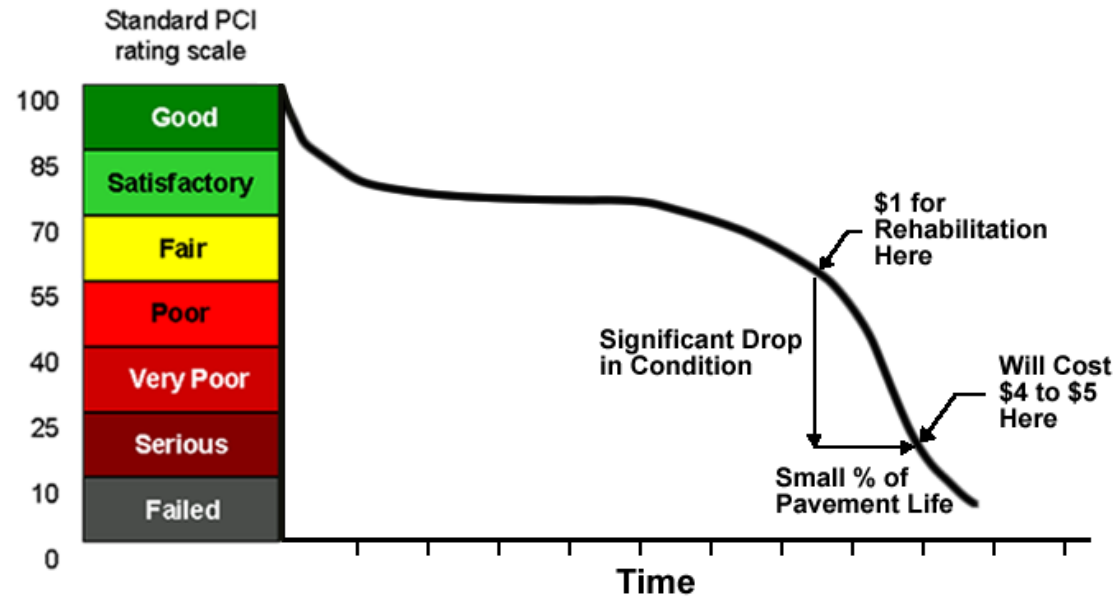




Developing a Lifecycle Management Framework

Lifecycle Management Framework

- Huntsville staff worked with PSD to develop Life Cycle Frameworks
 - Roads – detailed frameworks developed
 - Storm – In progress (data collection underway)
 - Facilities and Parks – high level models

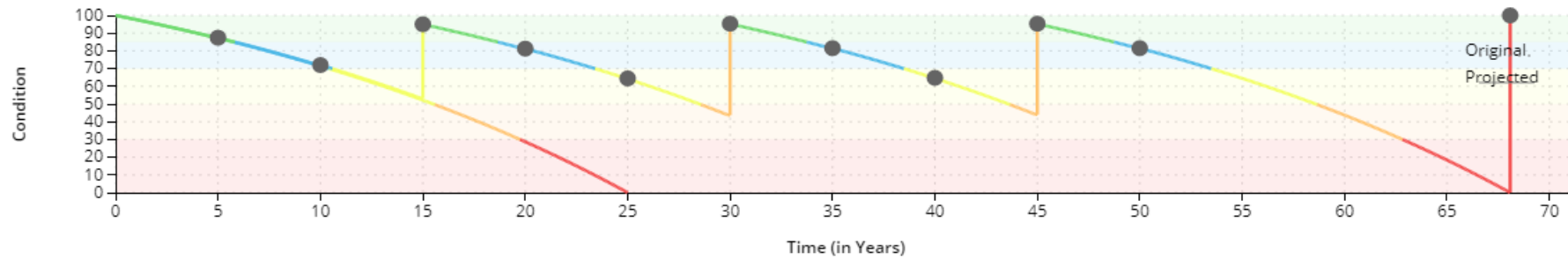
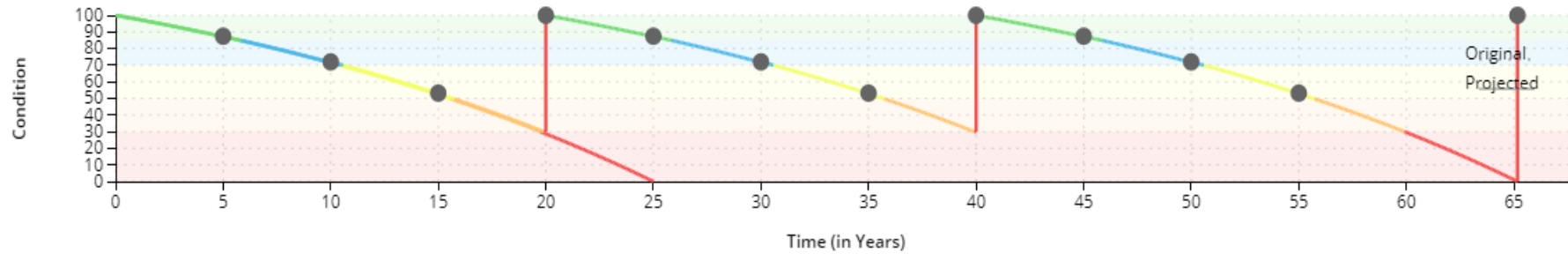
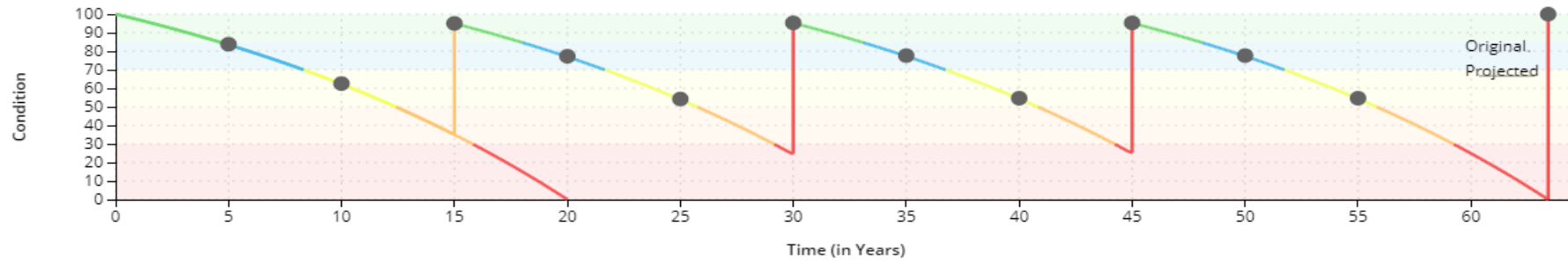


Lifecycle Management Framework - Roads

- Road Network Portfolio
 - Paved Road Composition
 - HCB HL4 – 50mm
 - HCB HL4 – 75mm
 - HCB Superpave – 100mm
 - Gravel Roads
 - Perpetual Maintenance
 - Tar & Chip
 - Perpetual Maintenance
 - Candidates for Structural Upgrades
 - Tar & Chip to HCB HL4 – 100mm



Lifecycle Management Framework - Roads



Improvement

Past: Pre O.Reg 588/17

Level of Development	Action
Minimum	Conduct reactive lifecycle activities on all asset classes.
Core	Install some proactive, systemic lifecycle activities in addition to reactive ones for all asset classes.
Intermediate	Install and perform regular, systematic lifecycle strategies for all asset classes.
Advanced	Install and perform systematic and optimized lifecycle strategies for all asset classes.

Present: O.Reg 588/17 Compliance—July 2021

Level of Development	Action
Minimum	Conduct reactive lifecycle activities on all asset classes.
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Improvement

Future: O.Reg 588/17 Compliance—July 2023

Level of Development	Action
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Goal

Level of Development	Action
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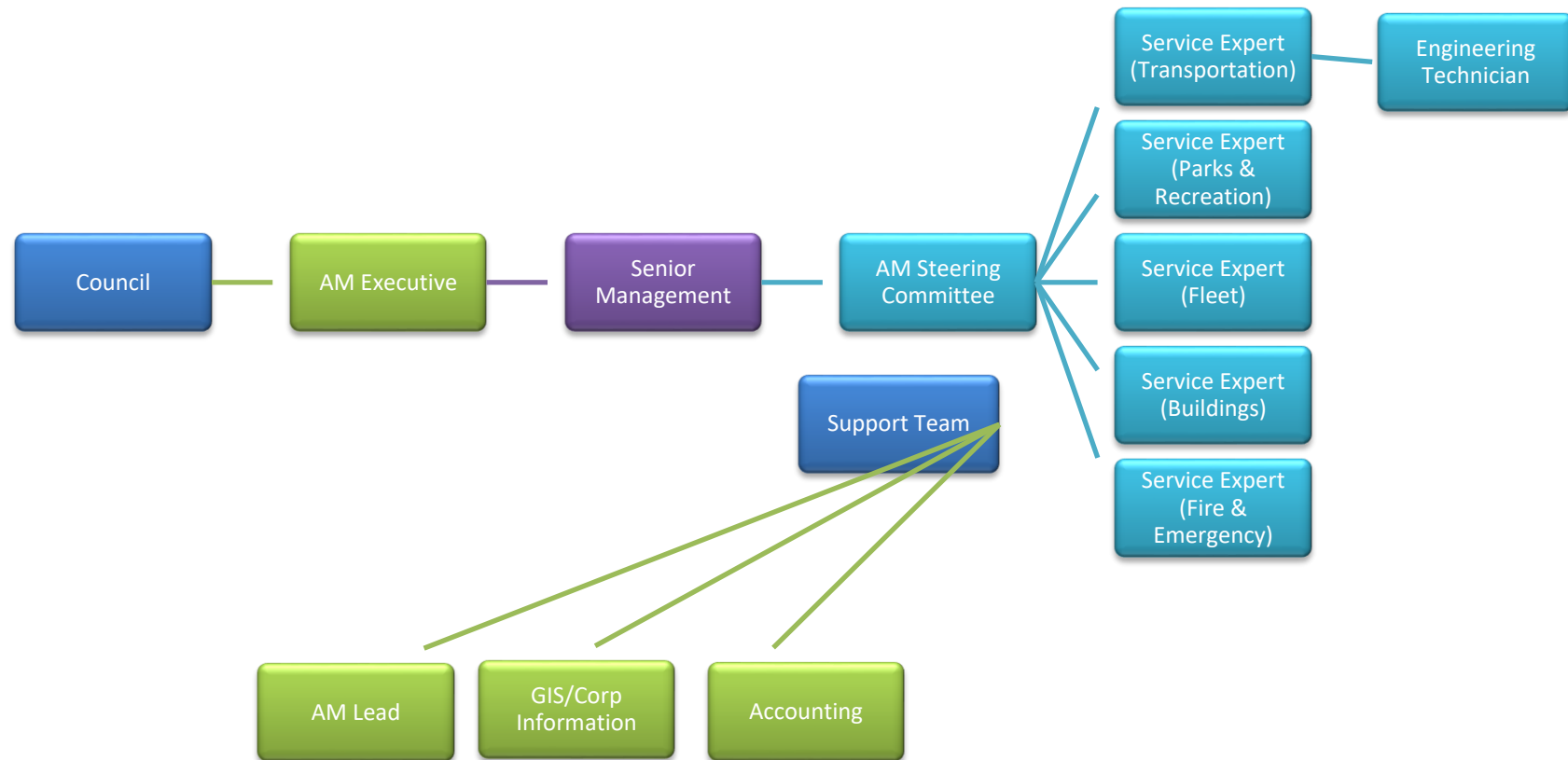
Inform Council on Decision-Making

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Huntsville's Asset Management Governance Structure

- Coordinated activity of staff from different departments to help Council make informed decisions on infrastructure investments



Communicate Benefits of Risk Assessment

- Assist with prioritization of resources
- Ensure vital services are available
- Prioritize and streamline inspections and condition assessment programs
- Prioritize and optimize operations and maintenance programs
- Prioritize and optimize capital budget process and program delivery
- Ensure that available money and resources are applied to the right asset at the right time



Communicate: Benefits of Life Cycle Management

- Transitioning from a reactive approach to a proactive approach in managing core infrastructure assets.
- Maximizing the life of an asset at the lowest possible cost.
- Improved levels of service.
- Cost avoidance.



Communicating Results

- Council needs to understand the risks to make informed infrastructure investment decisions:
 - How much our residents value the asset?
 - Is there an alternative to using this asset to provide the service?



Communicating Results

- Two significant components for good asset management
 1. Plan to proactively replace/rehabilitate the assets
 2. Plan to fund the replacement/rehabilitation of assets
- Reduces risk of asset failure and corresponding service consequences
- Life cycle management will optimize the budget



Huntsville's Asset Management Journey

- **Pre-2010: Reactive Decision-Making**
 - Budget to replace assets after they fail

- **Post 2010: Proactive Decision-Making**
 - Budget to replace assets based on condition

- **Future Budgets**
 - Incorporate life cycle management to forecast projects
 - Incorporate risk assessment to identify priority projects
 - Helps with the allocation of limited funds



Advancing Caledon's Asset Management Practices



Community Profile

- One of three municipalities of **Peel Region**
- **Largest** by area in the Greater Toronto Area (GTA)
- Population of just over **70,000**
- **\$1.5 billion** worth of infrastructure:
 - Roads
 - Stormwater network
 - Bridges & Culverts
 - Buildings & facilities, IT & furniture
 - Vehicles
 - Land improvements (such as parks etc.)
 - Machinery & equipment

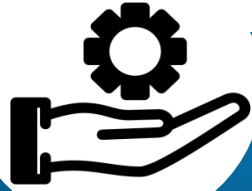


Development of the Asset Management Plan: Overview

2018-19

Asset Management Plan

The Town developed its second asset management plan to include both its core and non-core assets



Working group and service providers

Collaborate with service providers and respective service managers to develop asset management plan



Senior Management Team

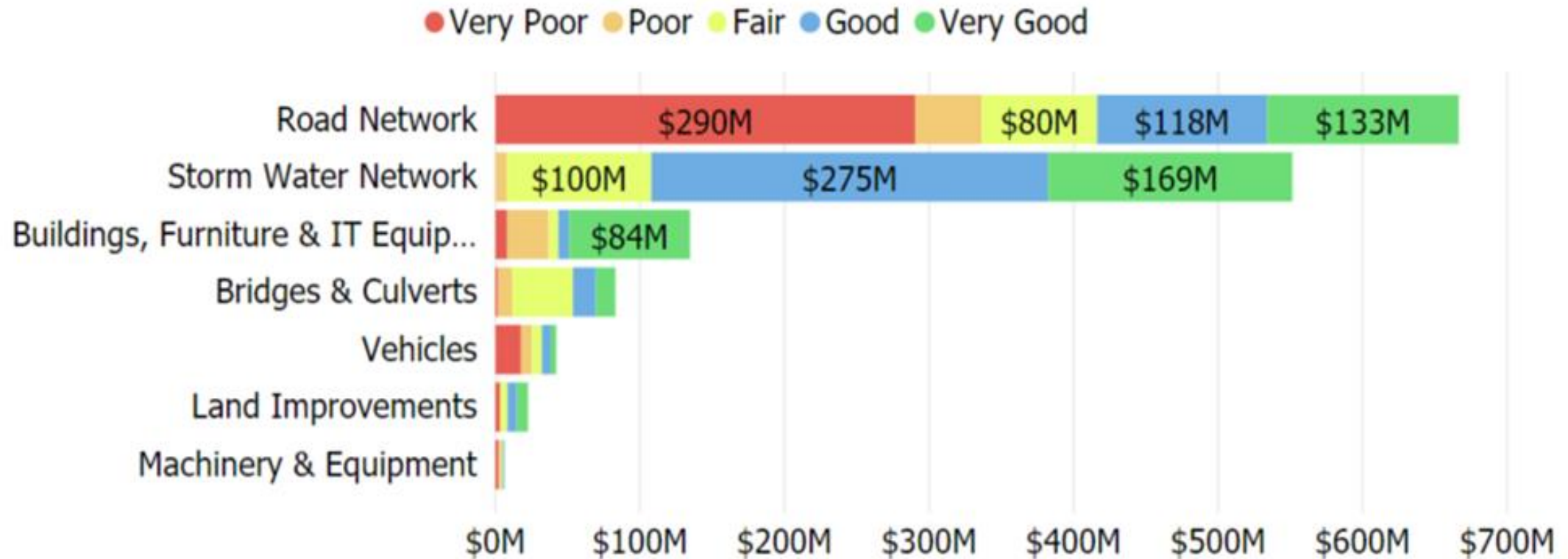
Review asset management plan and make necessary amendments based on the feedback



Asset Governance and Corporate Asset Management

Provide feedback and approve asset management plan

Development of the Asset Management Plan: Asset portfolio & condition



Total replacement value of the Town's assets is \$1.5 billion

- ❑ Road network and stormwater network together makes a little **over 80%** of the total asset network
- ❑ More than 50% of the town's assets are in **very good to good** condition

Lessons Learned

1 The Town is currently at an **initial stage** of asset management maturity, which means imperfect data and an evolving asset management plan.

E.g. Levels of Service, accurate replacement costs, harmonizing investments for greater ROI, condition vs age



Lessons Learned

2 Ensure that sufficient time is built within the project schedule to allow your staff enough time to review the data being used & provide feedback on the AM Plan.

E.g. ways to translate AM knowledge to staff, workshops style



Lessons Learned

- 3** Don't spend time collecting unnecessary data on your assets. Understand what is required based on your previous plans and feedback from the users. Collect the **"right"** data that will help you make effective decisions on your assets.



Case Study: Stormwater Infrastructure

Data challenges
encountered

Why these
challenges?

Next Steps
& Initiatives

1. Asset inventory
2. Condition
3. Replacement cost
4. Other asset attributes (e.g. location, structure, material, length, diameter)
5. Opportunities to improve coordination between the master plan, GIS & CityWide
6. Record retention (e.g. ECA assessments)

Case Study: Stormwater Infrastructure

Data challenges
encountered

Why these
challenges?

Next Steps
& Initiatives

1. "I can't see it, so I don't care."
2. "Fix what I see & use every single day."
3. Challenges in addition to the staff's day-to-day job roles & responsibilities
4. Lack of education & awareness (e.g. dumping engine oil down a catch basin has bad effects on the downstream environment)
5. Resource & funding limitations (including grant funding opportunities)
6. Understanding impacts of climate change
7. Lack of formalized program for conducting condition assessment of ponds, LID practices & natural assets
8. Clarity in directions & regulations for planning, management & repair
9. Rapidly changing policies & legislative requirements



Case Study: Stormwater Infrastructure

Data challenges
encountered

Why these
challenges?

Next Steps
& Initiatives

1. Partnerships with:
 - a. Private & public sector
 - b. Conservation authorities & other agencies
 - c. Internal staff
2. Ensure alignment of service objectives with the goals & strategies of climate change adaptation & mitigation plans
3. Policies & practices to ensure the necessary data from new developments are systematically collected & fits into the Town's current system

Caledon has phased in a capital budget of \$2M for stormwater services over the course of 5 years time period



Case Study: Stormwater Infrastructure

Data challenges
encountered

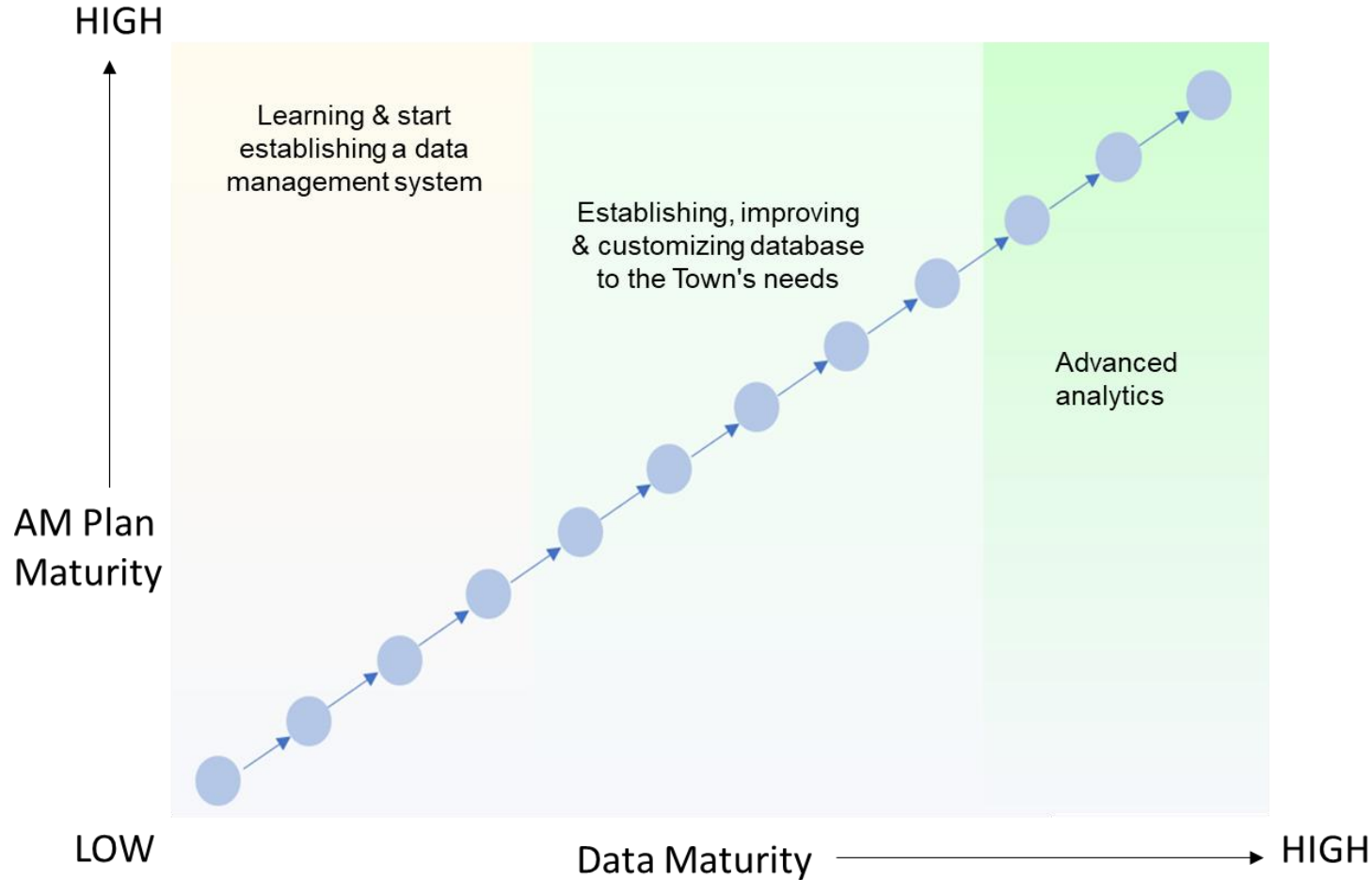
Why these
challenges?

Next Steps
& Initiatives



1. AM Technical Assistance project by FCM, AMO, AMONTario
2. MNAI Initiative: Business case on natural assets
3. Levels of Service & Levels of Risk approach for stormwater infrastructure by Credit Valley Conservation (CVC)
4. Green Infrastructure Knowledge Sharing workshop by TRCA (Toronto & Region Conservation Authority) & CVC
5. Continue to receive industry updates from MFOA
6. Peer-to-peer AM Knowledge Sharing project by FCM

Caledon's Asset Management Plan vs. Data Maturity Matrix



1. Learning & start establishing a data management system

- a. Raw data
- b. Significant data gaps
- c. Understanding what data is required
- d. Identifying sources of data
- e. How to get the data
- f. Address data gaps

2. Establishing, improving & customizing database to the Town's needs

- a. Informative clusters
- b. Condition-based forecasting & analysis
- c. Understanding performance management
- d. Capturing effectiveness of performance management
- e. Quantify threats & risks

3. Advanced analytics

- a. Risk & service-based budget optimization
- b. Predictive analytics
- c. Prescriptive techniques



Moving Forward



AM Policy, 2018
AM Plan, pilot
projects

Addressing data gaps &
improving data collection
process

2021 AMP & Risk
assessment

**Q1-Q2
2019**

**Q2-Q3
2019**

Ongoing

**Q4 2019-
Q3 2020**

2021

Maturity Assessment,
AM Steering
Committee/Working
Group

Levels of Service
Framework



Developing Levels of Service



Implementation

Final Steps:

- **Establish a Benchmark:** Levels of Service
- **Finalize Financial Strategy:**
 - Cost Quantification
 - Inclusion of Life Cycle Management
- **Formal Documentation**
- **Communication Strategy**
- **Execute:** Asset Management Plan



AMP 2018

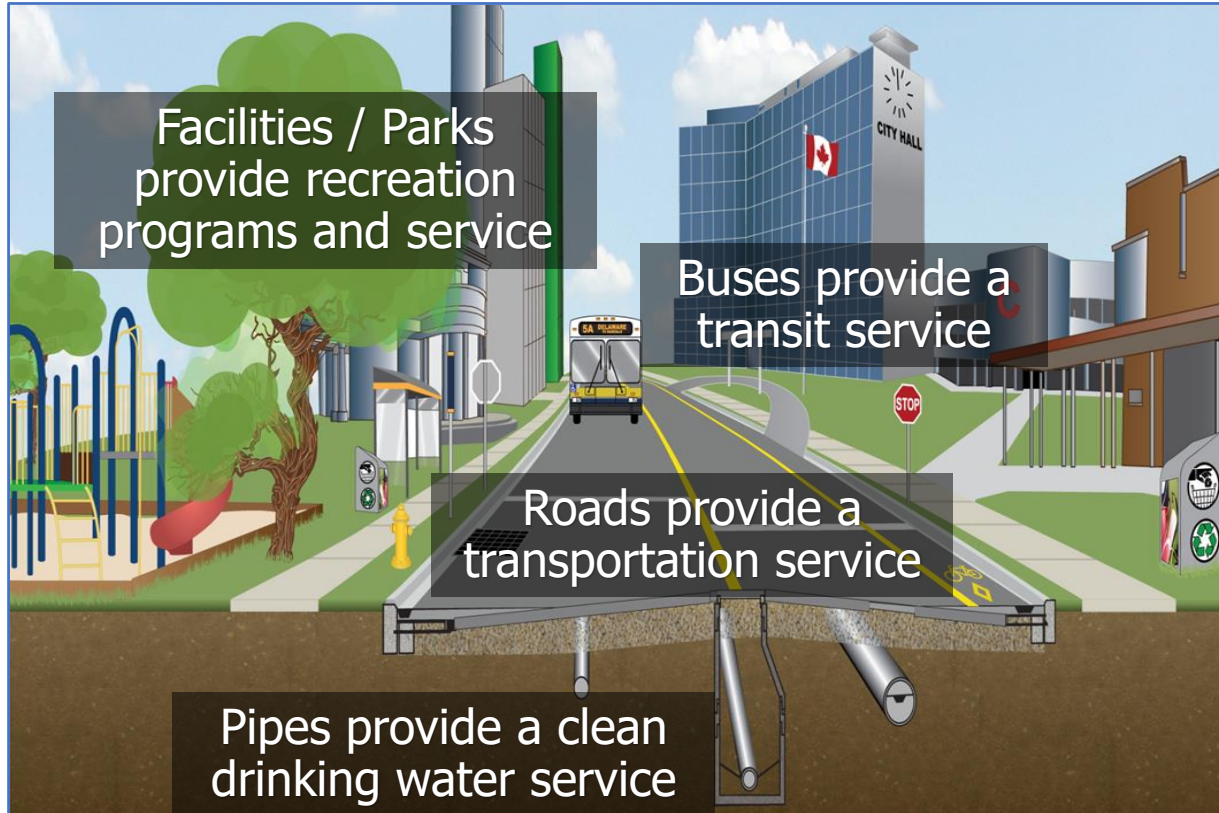


2018 Asset Management Plan for the
Town of Huntsville

Asset Management is Service Management

The asset is the conduit for the service

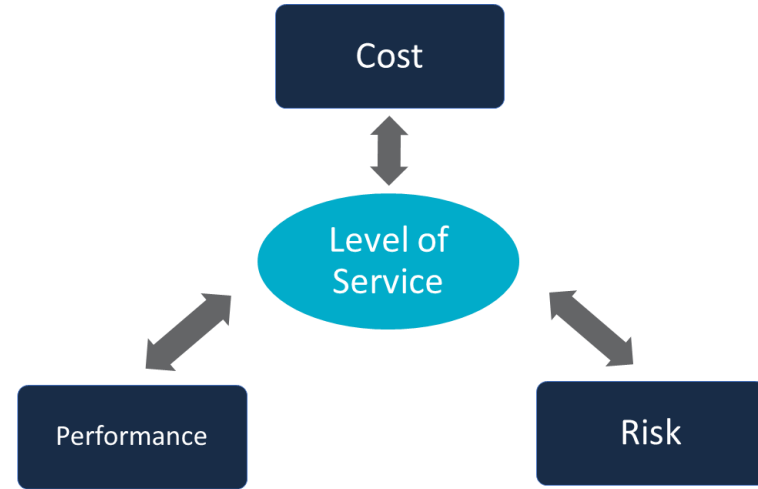
Infrastructure provides services that bring our municipalities to life



- Bridges
- Parks
- Roads
- Waste Water
- Water Systems
- Storm Water
- Facilities
- Fleet

What are Levels of Service?

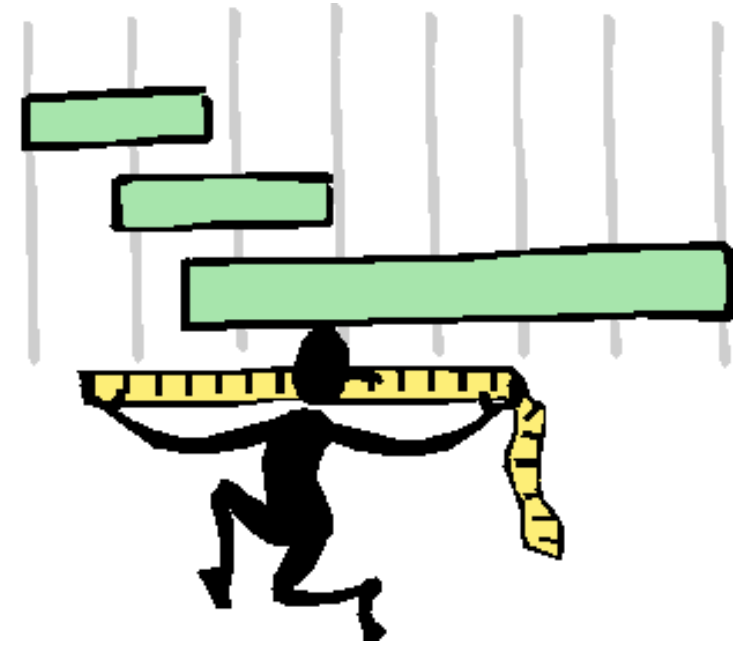
A measure of the service outcomes that the community receives



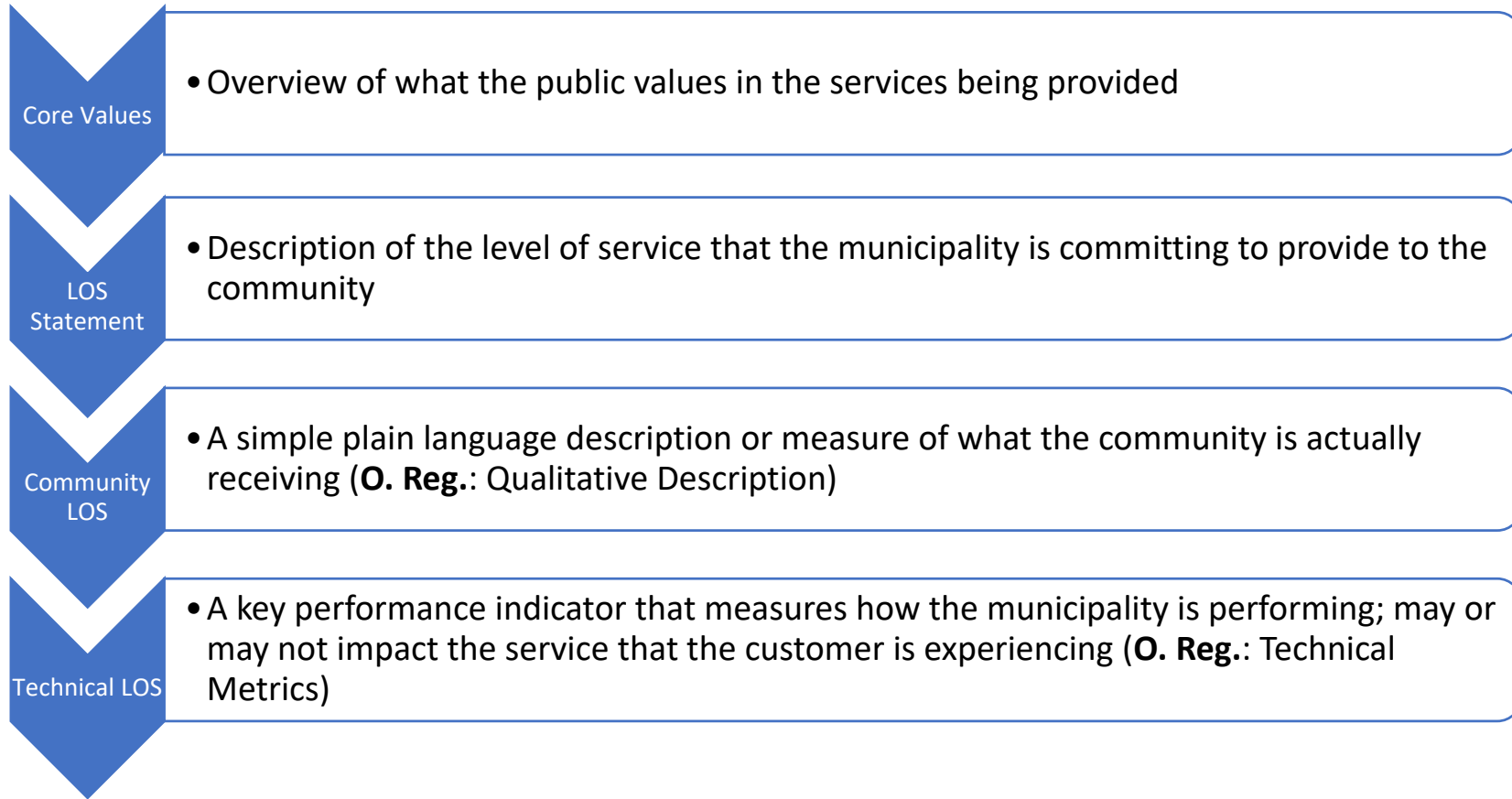
Asset Class	Annual Asset Class Reinvestment Rate	Condition	Risk	Level of Service Trend																		
Road Network	<p>Annual Asset Class Reinvestment Rate</p> <table border="1"> <tr> <th>Rate Type</th> <th>Value</th> </tr> <tr> <td>Current Reinvestment Rate</td> <td>2.21%</td> </tr> <tr> <td>Target Reinvestment Rate</td> <td>3.87%</td> </tr> </table>	Rate Type	Value	Current Reinvestment Rate	2.21%	Target Reinvestment Rate	3.87%	<ul style="list-style-type: none"> ■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor 	<table border="1"> <tr> <th>Risk Level</th> <th>Percentage</th> </tr> <tr> <td>Very High</td> <td>2%</td> </tr> <tr> <td>High</td> <td>6%</td> </tr> <tr> <td>Moderate</td> <td>36%</td> </tr> <tr> <td>Low</td> <td>43%</td> </tr> <tr> <td>Very Low</td> <td>13%</td> </tr> </table>	Risk Level	Percentage	Very High	2%	High	6%	Moderate	36%	Low	43%	Very Low	13%	
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Measuring Levels of Service

- Centralized performance measurement program
- Develop a framework for tracking and evaluating levels of service
 - Who will be responsible?
 - How will the data be collected and stored?
- Start with high-level service indicators (Cost, Condition, Risk)
 - Work towards technical levels of service later



LOS Framework Components



Determining Core Service Values

Wastewater System			
Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service
Accessible & Reliable	A reliable wastewater service is provided with minimal service disruptions; system failures and service requests are responded to promptly	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	% of properties connected to the municipal wastewater system
			% of sewer network length CCTV inspected
			# of sanitary service backups
			# of sanitary main backups

Determining Core Service Values

- What does the public value in the services that you provide to them?
 - Use core values to identify meaningful metrics

Value	Description
Accessible	Services are available and accessible for customers who require them.
Reliable	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.
Safe	Services are delivered such that they minimize health, safety and security risks.
Regulatory	Services meet regulatory requirements of all levels of government.
Affordable	Services are delivered at an affordable cost for both the organization and customer.
Sustainable	Services are designed to be used efficiently and long-term plans are in place to ensure that they are available to all customers into the future.

Drafting LOS Statements

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Drafting LOS Statements

- Level of service statements provide a high-level description of what that municipality is committing to provide to the community
- Focused on the organization's outputs rather than the outcome
 - E.g. A reliable wastewater service is provided with minimal service disruptions

Establishing Community LOS

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Establishing Community LOS

- A simple, plain language description or measure of what the community is receiving
- Some tension between O. Reg. and industry standards
 - O. Reg.: Qualitative high-level description of service; no performance measures
 - E.g. Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system
 - Industry Standard: Qualitative or quantitative performance measure (customer-focused)
 - E.g. Less than (x) service disruptions per year

Establishing Technical LOS

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Establishing Technical LOS

- A key performance indicator that measures how the municipality is performing; may or may not impact the service that the customer is experiencing
- Tips:
 - Leverage existing metrics that the municipality is already tracking
 - Select Performance Measures that are SMART
 - Consider how much control you have over the outcome; the more control, the stronger the link between LOS and performance measure
 - Who will be responsible to provide annual metrics?
 - Who will be responsible and have authority to centralize?

Developing Technical Measures

- Not all performance measures provide meaningful data; make sure you are measuring the right thing

Specific – defines results to be accomplished for a specific aspect of the service

Measurable – defines quantity, cost or quality metrics to determine process

Achievable – the performance target should be a realistic assessment of the performance required (i.e. not a 'stretch' target or an 'easy pass' target)

Relevant – supports organizational goals and provides a clear picture of whether the relevant level of service is being delivered

Timebound – specifies due date or frequency of action

Sources of Technical Metrics

- Existing reporting requirements
 - Financial Information Return
 - E.g. Number of paved lanes kilometers where the condition is rated as good to very good
 - E.g. Square meters of outdoor recreation facility space
- Benchmarking Initiatives
 - Provides Min, Max and Median values for comparison
 - NWWBI
 - 5 Year Running Average Capital Reinvestment / Replacement Value
 - # of Unplanned System Interruptions / 100 km length
- DWQMS
 - Water quality sampling
- Master Plans or other Strategic Documents

Trends Influencing LOS

- Climate change
- Aging infrastructure
- Uncertainty in growth forecasts
- Declines in water consumption
- Socio-Political expectations
- Stability and predictability of Gov't grants



Breakout Activity # 2

What does the Community Expect from Services?



Concluding Remarks



Get in Touch

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