The Ministry of Infrastructure

Municipal Asset Management Planning Regulation
(O. Reg. 588/17)

September 19, 2018
Overview

In December 2017, the province approved a regulation on municipal asset management planning.

This presentation provides an overview of:

• municipal asset management planning in Ontario;
• development of the regulation, including incorporation of municipal feedback;
• regulatory requirements; and,
• tools and supports to help municipalities comply with the regulation.
Municipalities deliver many of the services that are critical to the people of Ontario, and these services rely on well-planned and well-maintained infrastructure.

Population change, aging assets and the impacts of a changing climate are putting increased pressure on the ability of many municipalities to ensure the long-term sustainability of their infrastructure.

While many municipalities have asset management plans, significant differences exist between the completeness, detail, methodology and assumptions municipalities use to develop their current plans.
What is Asset Management Planning?

When done well, asset management planning is part of a strategic planning process that is integrated with budgeting processes and long-term financial planning.

Good asset management planning helps municipalities make well-informed and evidence-based decisions about their infrastructure assets.

There are four key components of an asset management plan:
1. Asset inventory
2. Levels of service
3. Asset management strategy
4. Financial strategy
Progress on Asset Management

- Ontario has focused on municipal asset management planning since 2012 when it introduced Building Together: Guide for Municipal Asset Management Plans.

- Ontario requires any municipality seeking provincial capital funding to prepare a detailed asset management plan and show how its proposed project fits within its plan.

- Ontario introduced an asset management regulation in December 2017 that requires that all municipalities have a comprehensive asset management plan in place by July 1, 2024.

Pre 2012
Less than 40% of municipalities have an asset management plan

Today
Almost all municipalities have some type of an asset management plan

Next Step
By July 1, 2024, 100% of municipalities have up-to-date robust plans that inform investment decisions
Consultations with Municipal Sector

**February - May 2016**
Formed a group of technical experts from the municipal sector to help draft regional consultation material.

**Association of Municipalities of Ontario “Memorandum of Understanding Table”**

**July - August 2016**
Online and regional consultations held throughout Ontario – 330+ people from 220 municipalities/other organizations attended.

**June 2016**

**December 2016**
Online summary report posted to Ontario.ca on feedback received during summer 2016 consultations.

**May - July 2017**
Revised regulatory proposal posted to Ontario Environmental/Regulatory Registries for comment; webinars held on proposal.

**September 2017**
Regulation is approved, incorporating critical feedback from two years of consultations with municipalities.

**December 2017**
Revisit Association of Municipalities of Ontario “Memorandum of Understanding Table”
Regulation Overview

Strategic Asset Management Policy
(by July 1, 2019)
Requires municipalities to outline commitments to best practices and continuous improvement

Asset Management Plan: Phase 1
(by July 1, 2021)
For core assets*:
• Inventory of assets
• Current levels of service measured by standard metrics
• Costs to maintain levels of service

Asset Management Plan: Phase 2
(by July 1, 2023)
Builds out the Phase 1 plan to include all assets

Asset Management Plan: Phase 3
(by July 1, 2024)
Builds on Phase 1 and 2 by adding:
• Proposed levels of service
• Lifecycle management and Financial strategy

Additional Information
• Municipalities under 25,000 are not required to discuss detailed risk analysis and growth.
• Plans must be updated every five years; annual progress reviewed by municipalities.

*Core assets are municipal roads, bridges water, wastewater and stormwater assets
The regulation requires all municipalities to develop and adopt a strategic asset management policy by July 1, 2019. The policy must include:

- Which municipal goals, plans, and policies the AMP will support.
- Process for how AMP affects development of the municipal budget.
- Principles that guide the AMP.
- Process for alignment with land-use planning framework.
- Commitment to consider climate change mitigation and adaptation.
- Municipality’s approach to continuous improvement.
- Identification of executive lead and how council will be involved.
- Commitment to provide opportunities to engage with the public.
Inventory Requirements

- The regulation requires municipalities to provide summary-level information on each asset category, including:
  - What assets are in the category;
  - The total replacement cost value;
  - The average age, condition; and
  - How condition information is gathered.

- While the regulation requires municipalities to discuss how the supporting information will be made available to the public, the detailed, asset-by-asset information is not required in the asset management plan.
Level of Service Approach

- The regulation requires a description of levels of service for core infrastructure assets, in accordance with the metrics provided in the regulation:
  - **Community (customer) level** – images and/or descriptions of what the end-user experiences
  - **Technical level** – using metrics that describe what the organization provides

### Example: Bridges

<table>
<thead>
<tr>
<th>Service attribute</th>
<th>Community levels of service</th>
<th>Technical levels of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>• Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).</td>
<td>• % of bridges in the municipality with loading or dimensional restrictions</td>
</tr>
</tbody>
</table>
Success Stories

- The Town eliminated the need for an estimated $30 million expansion of their wastewater treatment plant through process optimization resulting from a careful examination of service levels.

- Burlington introduced a temporary dedicated infrastructure levy designed to eliminate the unfunded renewal need over a 60-year period, thereby allowing the City to maintain an adequate level of service and prevent overwhelming future funding needs.
Success Stories

• The Town sought out other like-minded municipalities that recognized that by working together they could leverage each other’s asset management planning learnings, strengths and experiences.

• Wawa, in partnership with the Townships of Dubreuilville, Hornepayne and White River, have jointly hired an Asset Management Coordinator. All four communities have applied for FCM funding for this purpose.
Data Collection

• One of the primary goals of the regulation is to gain a better understanding of the infrastructure challenges municipalities face.

• Improving the standardization and consistency of asset management planning information will help the province and municipalities achieve this objective.

• The province is considering the possibility of leveraging the Financial Information Return process to collect asset management planning information to gather a more complete picture of municipal infrastructure needs.

• The Ministry of Municipal Affairs and Housing is currently in the process of conducting a pilot project to test the collection of municipal asset management planning information.

• The purpose of this pilot is to seek input from local governments on how to collect key information on municipal asset management and to foster discussions around long term financial sustainability.
Tools and Supports

- During extensive consultations in support of the development of the regulation, the province heard from many municipalities about the need for support to help them comply with the new regulatory requirements.

- In response, the province committed to delivering tools and supports that will help increase the capacity of municipalities to undertake this work, and encourage local ownership of asset management practices.

<table>
<thead>
<tr>
<th>Partner</th>
<th>Initiative</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMOntario</td>
<td>This initiative will expand the organization’s community of practice work to municipalities across the province.</td>
<td>Summer 2018 – Spring 2020</td>
</tr>
<tr>
<td>MFOA</td>
<td>This initiative has made a toolkit available to all municipalities to help them develop a regulation compliant strategic asset management policy. This initiative will provide small municipalities with in-person expert asset management plan assessments and expert advice that is tailored to the needs of the individual municipality.</td>
<td>Summer 2018 – Fall 2018 – Spring 2021</td>
</tr>
</tbody>
</table>
Current Status of Capital Funding Programs

- The **Ontario Community Infrastructure Fund** helps build and repair roads, bridges, water and wastewater systems in small, rural and northern communities.
  - The Fund is providing $300-million in 2018-19, including $200-million in formula-based funding and $100-million in top-up application funding.
  - The 2018 top-up application intake closed in August and funding decisions are expected by early 2019.
- On March 14, 2018, Ontario signed an integrated **Bilateral Agreement with the Federal government** for $11.8 billion in federal funding.
- The Ministry of Infrastructure is currently designing the program streams and developing the administrative processes for implementing this funding. Further information will be shared later this year.
Questions?

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ASSET MANAGEMENT

2018 MFOA CONFERENCE

Wednesday September 19th 2018.
Learning Objectives

In this presentation, you will learn about:

• New regulatory environment surrounding asset management

• Key items of the regulation which municipalities should implement immediately

• Leading AM approaches
Asset Management Context

- Growth Related Studies (DC, Growth Mgmt.)
- Water & Sewer Full Cost Recovery Studies
- Roads Management Study/Software
- Fleet Management Program/Software
- Building Condition Assessments
- Insurance Schedules
- Other

- Provincial Submissions (AMP, FIR, Grants)
- Long-Range Financial Plan
- Performance Measurements
- Service Level Tracking & Analysis
- Financial Documents
- Other

HEMSON
1. The Asset Register

• Increase, or maintain, the accuracy of the asset register
  – Inclusion of full range of assets

• Areas of Focus:
  – Valuation (Replacement Cost)
  – Level of Detail (components/segments)
  – Remaining Service Life (RSL):
    • Recording transactions (i.e. betterments)
    • Condition assessments
1. The Asset Register (cont’d)

- Levels of Service
  - Technical
  - Strategic
  - Operational
- Component Replacement Value
- Component Useful Life
- Lifecycle Profile
- Asset List
- Condition Assessment
- Maintenance Management
- Performance Rating
- Risk & Criticality
- PSAB 3150
- Budget

ASSET REGISTER

- Asset Management Strategy
- Financing Strategy
- Other
## 2. Refining the Asset Data

<table>
<thead>
<tr>
<th>WHOLE ASSET</th>
<th>COMPONENT / SEGMENT</th>
<th>DETAILED COMPONENT / SEGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUILDING</td>
<td>Substructure</td>
<td>Conveying</td>
</tr>
<tr>
<td></td>
<td>Shell</td>
<td>Plumbing</td>
</tr>
<tr>
<td></td>
<td>Interiors</td>
<td>HVAC</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>Fire Protection</td>
</tr>
<tr>
<td></td>
<td>Equipment and Furniture</td>
<td>Electrical</td>
</tr>
<tr>
<td></td>
<td>Special Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Site Work</td>
<td></td>
</tr>
<tr>
<td>BRIDGE</td>
<td>Deck</td>
<td>Walls</td>
</tr>
<tr>
<td></td>
<td>Structure</td>
<td>Surface</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Rails</td>
</tr>
</tbody>
</table>

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**HEMSON**

23
3. Replacement Values

- Key input and backbone to overall success of your asset management plan
- Formal and consistent approach
- Municipalities should look to move away from using inflationary approaches
### Methodology

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Description</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recent Tenders</strong></td>
<td>• Recent tenders in neighbouring municipalities and surrounding areas – cost to construct certain buildings, the acquisition cost of a new truck, vehicle or heavy equipment, cost to rehabilitate/replace roads and bridges.</td>
<td>Most Reliable</td>
</tr>
<tr>
<td><strong>Local Price Index</strong></td>
<td>• Using local price indices for recently built or acquired assets to adjust to current value.</td>
<td>Reliable</td>
</tr>
<tr>
<td><strong>Insurance Values</strong></td>
<td>• Insurance values, although often low, are a good benchmark or reasonability test.</td>
<td>Somewhat Reliable</td>
</tr>
<tr>
<td><strong>Inflated Historical Costs</strong></td>
<td>• Historical cost inflated to current dollars. This approach is best used for assets recently acquired or for low value assets which represent a small share of a local government’s total replacement value. A local government should look to move away from this approach and generate replacement cost based on the first two more credible methodologies.</td>
<td>Least Reliable</td>
</tr>
</tbody>
</table>
3. What Costs Should your Asset Include?

- Costs directly associated with preparing a tangible capital asset for its intended use can be included as part of the cost (but excludes overhead)
  - Original cost to purchase/construct
  - Installation and assembly
  - Initial delivery
  - Site preparation
  - Testing
  - Professional fees
  - Internal design and inspection fees
4. True Condition of Assets

- Perform inspections, condition assessments etc.
- Age is not always an appropriate proxy for condition
- 5-Tier rating system

Source: City of Ottawa, 2012
### 4. Condition Assessment Parameters

<table>
<thead>
<tr>
<th>Rating</th>
<th>Condition</th>
<th>Condition Assessment Definition</th>
<th>Age Based Condition</th>
<th>Probability of Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very Good</td>
<td>Well maintained, good condition, new or recently rehabilitated.</td>
<td>Greater than 80% of asset useful life remaining.</td>
<td>Improbable</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>Good condition, few elements exhibit existing deficiencies.</td>
<td>60% - 79.9% of asset useful life remaining.</td>
<td>Not likely</td>
</tr>
<tr>
<td>3</td>
<td>Fair</td>
<td>Some elements exhibit significant deficiencies. Asset requires attention.</td>
<td>40% - 59.9% of asset useful life remaining.</td>
<td>Possible</td>
</tr>
<tr>
<td>4</td>
<td>Poor</td>
<td>A large portion of the system exhibits significant deficiencies. Asset mostly below standard and approaching end of service life.</td>
<td>20% - 39.9% of asset useful life remaining.</td>
<td>Likely</td>
</tr>
<tr>
<td>5</td>
<td>Very Poor</td>
<td>Widespread signs of deterioration, some assets may be unusable. Service is affected.</td>
<td>Less than 20% of asset useful life remaining.</td>
<td>Very Probable</td>
</tr>
</tbody>
</table>
5. What Service does your Community Expect?

- Determine public perception on state of the assets and service delivery
- Consider questionnaire and supporting statements
- State of the Local Infrastructure Report Cards
  - Coincide with annual budgets
- In order to be effective, local governments need to provide education first
  - Both Council and Public
5. Sample State of the Local Infrastructure Report Card

PARKS AND RECREATION

VERY GOOD

Total Asset Replacement Value: $430.7 Million
Current Condition: Very Good
Future Condition Trend (next 10 years): Declining
Asset Management Policy: Provide safe, clean parks and open space systems through proactive property management in a cost effective way
Assets Included in this Category: Park Assets, Recreation and Open Space.
Data Confidence and Reliability: Condition - Age Based: Low

The total replacement value of the City’s parks and recreation infrastructure is $430.7 million, of which, 90% of the total value is related to the City’s park assets. Nearly 65% of the City’s Park and Recreation assets are considered to be in Good to Very Good condition, with the remaining assets close to, or past, the end of their service life. As the City’s Parks and Recreation Services assets are overall in Very Good condition, these assets are meeting current needs. However, these assets may require attention as they age over time.

Data Source: departmental inventories, Development Charge Background Study, Parks and Recreation Master Plan

Overall Condition
Future Condition Trend
Data Confidence and Reliability
Condition Details by service category
Replacement Value by Asset Category
5. Sample Questions to Consider

1. The Municipality’s current spending on infrastructure renewal and construction is $xx million. (Strongly Support, Somewhat Support, Somewhat Oppose, Strongly Oppose).

2. The Municipality increasing property taxes to fund infrastructure renewal and construction. (Strongly Support, Somewhat Support, Somewhat Oppose, Strongly Oppose).

3. How do you perceive the amount of information provided by the Municipality on asset management matters, including reporting and capital budget information? (Too much, Right amount, Not enough).

4. How informed/aware are you in regards to new capital renewal or construction projects in the Municipality? (Very aware, Somewhat aware, Not very aware, Not at all aware).

5. Which capital infrastructure asset group in the Municipality’s portfolio do you feel requires the most attention? (Pick from services i.e. roads, recreation facility, library, etc.).
6. Level of Service: Understanding Community Expectations

- Given the choice, a community expects the highest level of service.

- These expectations evolve when the costs associated with the level of service is understood.

- Important to first understand existing Levels of Service and costs.

Public Wants: Funding → Reality
Public Willing to Pay For
### 6. Sample LOS Tracking and Targets

<table>
<thead>
<tr>
<th>Key Indicators</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>5 Year Average</th>
<th>Qualitative Measure</th>
<th>TARGET LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of paved lane kilometers where the condition is rated as good to very good</td>
<td>42%</td>
<td>43%</td>
<td>43.3%</td>
<td>43.7%</td>
<td>56.7%</td>
<td>46%</td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>Number of water main breaks per 100 km of water distribution/transmission pipe in a year</td>
<td>2.0</td>
<td>2.5</td>
<td>2.5</td>
<td>1.7</td>
<td>5.0</td>
<td>2.9</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Unaccounted for Water (water loss after distribution)</td>
<td>31.0%</td>
<td>29.1%</td>
<td>29.9%</td>
<td>30.3%</td>
<td>31.4%</td>
<td>30.4%</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Percentage of wastewater estimated to have by-passed treatment</td>
<td>0.005%</td>
<td>0.006%</td>
<td>0.007%</td>
<td>0.007%</td>
<td>0.008%</td>
<td>0.0066%</td>
<td></td>
<td>0.005%</td>
</tr>
</tbody>
</table>

**Legend:**
- Performing in the right direction
- Performing in the wrong direction
- Yearly difference in performance is minimal

HEMSON
6. Developing a LOS Target

• Analyse current performance and historical trends to help identify appropriate goals
  – Have service levels been increasing/decreasing over time with population growth, etc.

• Targets should consider risk, safety and cost

• Important to establish short and long-term targets
  – Desired LOS will not be achieved immediately

• Industry standards and municipal benchmarking

• Community input
### 6. Identifying Cost of Level of Service Targets

<table>
<thead>
<tr>
<th>Services</th>
<th>Technical Level of Service</th>
<th>Current Level of Service</th>
<th>Target Level of Service</th>
<th>Costs of Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation Facilities</td>
<td>Utilization percentage of facilities</td>
<td>90% utilization</td>
<td>Utilization percentage of all facilities between 80% and 100%</td>
<td>Additional GFA needed to maintain utilization between 80% and 100% ($350 per sq.ft. plus $10 sq.ft to maintain)</td>
</tr>
<tr>
<td></td>
<td>All facilities meet accessibility requirements</td>
<td>1 facility remains that does not meet accessibility requirements</td>
<td>All facilities meet accessibility requirements</td>
<td>$350,000 required to bring remaining facility to minimum accessibility standards</td>
</tr>
</tbody>
</table>
6. Identifying Cost of Level of Service Targets

<table>
<thead>
<tr>
<th>Services</th>
<th>Technical Level of Service</th>
<th>Current Level of Service</th>
<th>Target Level of Service</th>
<th>Costs of Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads and Related</td>
<td>• Average condition rating of roads: local, collector, arterial</td>
<td>• Current Average Condition Rating of all Roads = 65/100</td>
<td>• Average Condition Rating of all Roads = 70/100</td>
<td>• Current Annual maintenance budget = $1 Million. 5% increase in costs to achieve target</td>
</tr>
<tr>
<td>Transit</td>
<td>• Number of preventative inspections and maintenance per month = 1</td>
<td>• Preventative inspections and maintenance per vehicle per month = 1</td>
<td>• Preventative inspections and maintenance per vehicle per month = 1</td>
<td>• Annual preventative maintenance costs $500,000</td>
</tr>
</tbody>
</table>
6. Establishing Service Level Indicators Group Session

• Break out into groups and brainstorm a variety of level of service measures:
  – Community expectation (qualitative)
  – Technical level of service

• Consider service levels for asset categories other than core infrastructure

• 10-15 minutes and we can review results as a team
6. Existing Level of Service Measures: Example

<table>
<thead>
<tr>
<th>Service Category/Attribute</th>
<th>Community LOS (Qualitative Description)</th>
<th>Technical LOS (numerical/statistical reference)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water / Reliability</td>
<td>Clean Water Taste/Odour/Colour</td>
<td># of boil water advisory notices per year.</td>
</tr>
<tr>
<td>Bridges / Scope</td>
<td>Use by local vehicles Minimal trucks Pedestrian friendly Use by agricultural vehicles</td>
<td>% of bridges with loading or dimensional restrictions</td>
</tr>
<tr>
<td>Facilities / Quality</td>
<td>Ramp access Elevator access</td>
<td># of facilities that do not comply with AODA requirements</td>
</tr>
<tr>
<td>Recreation / Scope</td>
<td>Available hours of operations Clean spaces Ice Rink for public use</td>
<td># of hours of programming Ice Time Utilization</td>
</tr>
</tbody>
</table>
## 6. Level of Service Measures

<table>
<thead>
<tr>
<th>Service Category/Attribute</th>
<th>Community LOS (Qualitative Description)</th>
<th>Technical LOS (numerical/statistical reference)</th>
</tr>
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<tbody>
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</table>
7. Risk Based Approach to Asset Management

• Municipalities should take a risk based approach to asset management

• Important to assess the risks associated to each asset
  – If an asset fails what are the consequences?
  – What is the likelihood of asset failure?

• Consequence X Likelihood = Risk
7. Risk Matrix

- Probability of Failure level 5 (Very Poor Asset) multiplied by Consequence of Failure level 5 = Risk Score of 25.

- This would illustrate that the particular asset should be prioritized for replacement immediately as it would have the highest risk.
# 7. Likelihood of Failure

- Likelihood of a failure can be defined in different ways but often linked to asset condition

- Descriptions and details will depend on municipal context and asset category

<table>
<thead>
<tr>
<th>Rating</th>
<th>Probability</th>
<th>Description</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improbable</td>
<td>May occur only in exceptional circumstances</td>
<td>More than 20 years</td>
</tr>
<tr>
<td>2</td>
<td>Not likely</td>
<td>Could occur at some time</td>
<td>Within 10-20 years</td>
</tr>
<tr>
<td>3</td>
<td>Possible</td>
<td>Might occur at some time</td>
<td>Within 3-5 years</td>
</tr>
<tr>
<td>4</td>
<td>Likely</td>
<td>Will probably occur in most circumstances</td>
<td>Within 2 years</td>
</tr>
<tr>
<td>5</td>
<td>Very Probable</td>
<td>Expected to occur in most circumstances</td>
<td>Within 1 year</td>
</tr>
</tbody>
</table>
7. Consequence of Failure

- Consequence of a failure can consider a range of factors
- Municipalities may establish weighting criteria for each category

<table>
<thead>
<tr>
<th>Rating</th>
<th>Injury</th>
<th>Service Interruption</th>
<th>Environment Damage</th>
<th>Finance</th>
<th>Reputation Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>&lt; 4 hours</td>
<td>None</td>
<td>&lt;$20k</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>First Aid</td>
<td>Up to 1 day</td>
<td>Minor</td>
<td>$20k - $100k</td>
<td>Minor Media</td>
</tr>
<tr>
<td>3</td>
<td>Medical Treatment</td>
<td>1 day – 1 week</td>
<td>Short Term</td>
<td>$100k - $500k</td>
<td>Moderate Media</td>
</tr>
<tr>
<td>4</td>
<td>Disability/Fatality</td>
<td>1 week – 1 month</td>
<td>Long Term</td>
<td>$500k - $1M</td>
<td>High Media</td>
</tr>
<tr>
<td>5</td>
<td>Fatality</td>
<td>&gt; 1 month</td>
<td>Irreversible</td>
<td>&gt;$1M</td>
<td>Censure/Inquiry</td>
</tr>
</tbody>
</table>
7. Example: Asset Risk Assessment

- Municipalities should develop an asset risk registry to identify risk for each asset/class over time
- Risk registry can be developed by asset category

<table>
<thead>
<tr>
<th>Failure Event</th>
<th>Likelihood Of Failure</th>
<th>Consequence of Failure Categories</th>
<th>Overall Consequence</th>
<th>Risk Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Collapse</td>
<td>Improbable (Condition = Very Good 1)</td>
<td>Injury = Fatality (5 Rating)</td>
<td>Rating 4</td>
<td>Low to Moderate Risk (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Service Interruption = &gt; 1 month (5 Rating)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Damage = Minor (2 Rating)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finance = &gt;$1 million (5 Rating)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reputation Damage= High Media (4 Rating)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 8. Annual Costs Broken Down by Key Category

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Approach</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maintenance</strong></td>
<td>Servicing assets on a regular basis in order to fully realize the original service potential.</td>
<td>Base maintenance spending on prior years’ operating budgets, apply inflationary increase, and consider necessary adjustments for additional costs.</td>
<td>Crack sealing</td>
</tr>
<tr>
<td></td>
<td>Maintenance will not necessarily extend the life of an asset or add to its value.</td>
<td>Utilize condition of assets, consider risk levels and desired levels of service.</td>
<td>Roof repair</td>
</tr>
<tr>
<td></td>
<td>Not performing regular maintenance may reduce an asset’s useful life.</td>
<td></td>
<td>Component renewal of a building system.</td>
</tr>
<tr>
<td><strong>Renewal/Rehabilitation Solutions</strong></td>
<td>Enhancements that improve the service potential of an asset.</td>
<td>Based on historical practices and incorporate any necessary adjustments for unexpected events.</td>
<td>Transit vehicles receiving a midlife refurbishment, which may include a new reconditioned engine and transmission.</td>
</tr>
<tr>
<td></td>
<td>Allows an asset to reach its target functional condition and to meet regulations.</td>
<td>Utilize condition of assets, consider risk levels and desired levels of service.</td>
<td></td>
</tr>
</tbody>
</table>
# 8. Annual Costs Broken Down by Key Category

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Approach</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement</td>
<td>Allows an asset to reach its target functional condition and to meet regulations by completely replacing or reconstructing the asset.</td>
<td>Utilize condition of assets, consider risk levels and desired levels of service.</td>
<td>Buses near the end of their useful life require full replacement as technology may be obsolete and additional rehabilitation will not achieve cost efficiencies.</td>
</tr>
<tr>
<td>Disposal</td>
<td>Some assets will require costs of disposal or demolition.</td>
<td>Legislative or safety related costs should be considered.</td>
<td>Landfills or contaminated sites will require annual perpetual costs to retire and maintain.</td>
</tr>
<tr>
<td>Expansion Activities</td>
<td>Acquiring assets or expanding the capacity of current assets. Projected demands exceed current capacity or if a new service is introduced.</td>
<td>Costs associated to growth will include fixed costs of expansion and additional costs of maintenance. Consider economies of scale for asset expansions (engineered services such as roads, water, sewer and storm)</td>
<td>Expanding water infrastructure is mostly related to demand from new development, however efficiencies can be achieved if timing of new infrastructure also coincides with addressing existing deficiencies in the system.</td>
</tr>
</tbody>
</table>
8. Full Asset Lifecycle Model

- **Year 1**: Highly significant in acquisition/construction costs.
- **Years 2-8**: Operation and maintenance costs increase, showing a "burn in" phase.
- **Year 9**: Rehabilitation costs peak, indicating a need for major maintenance.
- **Years 10-20**: Costs stabilize, with a gradual increase in disposal costs.

Legend:
- Blue: Acquisition/Construction
- Red: Operation & Maintenance
- Green: Rehabilitation
- Grey: Disposal

**Notes:**
- The graph illustrates the lifecycle costs over a period of 20 years, showing the peaks and troughs of different asset maintenance and disposal phases.
8. Group Discussion: Risk Assessment

- Consider a recreation building
- What failure events or service interruptions can occur?
- What is the consequence of such an event?

<table>
<thead>
<tr>
<th>Event</th>
<th>Possible Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Failure</td>
<td>Injury: Rating 1 (None)</td>
</tr>
<tr>
<td></td>
<td>Service Interruption: Rating 3 (1 day – 1 week)</td>
</tr>
<tr>
<td></td>
<td>Reputation Damage: Rating 2 (Minor Media)</td>
</tr>
<tr>
<td></td>
<td>Financial: Rating 3 ($100k - $500k)</td>
</tr>
<tr>
<td></td>
<td>Environmental Damage: Rating 1 (None)</td>
</tr>
</tbody>
</table>

_Total Possible Consequence: Rating 2_
9. Continuous Improvement

• Most asset managers recognize that they will not have perfect asset management processes and data

• Commitment to continuous improvement is key to success

• Considered in the context of evolving asset management program
  • Incorporate into Strategic Asset Management Policy
9. Continuous Improvement: Evaluation of Existing Practices

- ISO 5500 Framework
- Evaluated against a scale of 0 - 5
- 39 focus areas – questions to determine how the organization responds to AM

Figure 2 ISO 55001 Maturity Scale
## 9. Continuous Improvement: Data Quality Confidence

<table>
<thead>
<tr>
<th>Confidence Grade</th>
<th>Description</th>
</tr>
</thead>
</table>
| **5** Highly Reliable | • Data based on sound records, procedure, investigations and analysis, documented properly and recognized as the best method of assessment.  
• *Dataset is complete and estimated to be accurate +/- 2%.* |
| **4** Reliable Data | • Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation.  
• *Dataset is complete and estimated to be accurate +/- 10%.* |
| **3** Uncertain | • Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade 4 or 5 data is available.  
• *Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated +/- 25%.* |
| **2** Very Uncertain | • Data based on unconfirmed verbal reports and/or cursory inspection and analysis.  
• *Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy +/- 40%.* |
| **1** Unknown | • None or very little data held |
9. Continuous Improvement: Asset Management Policies

• More Stringent fiscal policies
  – Reserve fund management
  – Debt Management (inclusive of retired debt)
  – Use of alternative revenue sources
  – Lifecycle costs are built into the approval of new capital projects
  – Requirement for annual capital contributions to be at least equal to annual depreciation

• Council approved Capital Prioritization Model to aid decision making

• Approved Risk/Criticality Model
Asset Management Resources

Colin Macdonald
Manager of Policy (Acting)
September 19, 2018
Overview

• AMP IT UP 1.0 (2016 – 2018)
  • Self assessment tool (SAT)
  • Select observations from data
• AMP IT UP 2.0 (2018 – 2021)
  • SAT 2.0
• Strategic Asset Management Policies Toolkit
• Asset Management Community of Practice Guide and Case Studies

Each of these projects and programs was/are funded in part by the Province of Ontario
AMP IT UP 1.0

- Self Assessment
  - Internal review of existing AMP

- Consultant Assessment
  - External review of existing AMP by finance and engineering experts

- Municipal Action Plan
  - Coaching
  - Identification of impactful next steps
  - Near and medium term improvement plan
Municipal Participants

- 93 participants with a population less than 20,000
- 12% in Central;
  30% in Eastern;
  25% in Western;
  23% in North Eastern;
  10% in North Western
Self-Assessment Tool

• Extensive questionnaire
  • Between 84 – 606 questions

• 12 Sections
  • (Aligned with Building together – Guide for municipal asset management plans)
    • 10 asset classes

• Linked to a Maturity Framework to provide in depth explanation of each question
Overall Score by Population Group

- Population Group
  - <=1000
  - 1001 - 2500
  - 2501 - 5000
  - 5001 - 7500
  - 7501 - 10000
  - 10001 - 12500
  - 12501 - 15000
  - 15001 - 20000

- Overall Score
  - 0.0%
  - 5.0%
  - 10.0%
  - 15.0%
  - 20.0%
  - 25.0%
  - 30.0%
  - 35.0%
  - 40.0%
  - 45.0%
  - 50.0%

- n = 93
Average AMP Score by MSO Region

n = 93
## Section Scores Ranked (Worst to Best)

<table>
<thead>
<tr>
<th>Rank</th>
<th>AMP SAT Section</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Levels of Service (LOS)</td>
<td>35.7%</td>
</tr>
<tr>
<td>2</td>
<td>Asset Management Policies &amp; Procedures</td>
<td>36.6%</td>
</tr>
<tr>
<td>3</td>
<td>Public Engagement and Communication</td>
<td>37.0%</td>
</tr>
<tr>
<td>4</td>
<td>Lifecycle Strategy</td>
<td>39.6%</td>
</tr>
<tr>
<td>5</td>
<td>Financing Strategy</td>
<td>40.1%</td>
</tr>
<tr>
<td>6</td>
<td>Making Asset Management Operational</td>
<td>41.0%</td>
</tr>
<tr>
<td>7</td>
<td>Continuous Improvements and Updates</td>
<td>44.5%</td>
</tr>
<tr>
<td>8</td>
<td>Asset Management Tools</td>
<td>45.5%</td>
</tr>
<tr>
<td>9</td>
<td>State of Local Infrastructure</td>
<td>46.0%</td>
</tr>
<tr>
<td>10</td>
<td>Internal Governance and Ownership</td>
<td>53.6%</td>
</tr>
<tr>
<td>11</td>
<td>Council Approval and Support</td>
<td>67.3%</td>
</tr>
<tr>
<td>12</td>
<td>Introduction (Benefits of Asset Management)</td>
<td>69.5%</td>
</tr>
</tbody>
</table>
 Ranked by Asset Class (Best to Worst)
(includes SOLI, LOS, Lifecycle Strategy and Financing Strategy only)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Asset Class</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water</td>
<td>48.5%</td>
</tr>
<tr>
<td>2</td>
<td>Wastewater</td>
<td>46.5%</td>
</tr>
<tr>
<td>3</td>
<td>Bridges and Culverts</td>
<td>45.4%</td>
</tr>
<tr>
<td>4</td>
<td>Roads</td>
<td>43.6%</td>
</tr>
<tr>
<td>5</td>
<td>Vehicles and Equipment</td>
<td>39.4%</td>
</tr>
<tr>
<td>6</td>
<td>Other</td>
<td>39.4%</td>
</tr>
<tr>
<td>7</td>
<td>Stormwater</td>
<td>39.2%</td>
</tr>
<tr>
<td>8</td>
<td>Solid Waste</td>
<td>38.0%</td>
</tr>
<tr>
<td>9</td>
<td>Facilities</td>
<td>36.7%</td>
</tr>
<tr>
<td>10</td>
<td>Improvement to Land</td>
<td>33.5%</td>
</tr>
</tbody>
</table>
Select observations from analysis

- **Internal governance and ownership** is a foundational element of an asset management system.
- On aggregate, municipalities with populations below 5,000 struggle most with asset management.
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
- Population <= 5,000
- Group 1 Intake: September 24, 2018
- Group 2 Intake: December 2018

Phase 2
- Population <= 10,000
- Intake: April 2019

Phase 3
- Population <= 25,000
- Intake: August 2019
**Pre-Program Analysis**
- Webinar
- Complete Self Assessment
- Other Information

**During/Ongoing Support**
- In Person Visit

**Post-Program Analysis**
- Final Assessment and feedback on pilot

- **Sep ’18 – Feb ‘19**
- **March – Nov ‘19**
- **Nov ‘19**
SAT 2.0 and Maturity Framework

UNDER CONSTRUCTION

• SAT 444 will be accessible to all municipalities soon

• MFOA’s asset management maturity framework is available as a single document or chapter by chapter

• Available at www.mfoa-amp.ca
Maturity Framework
Strategic AM Policy (SAMP) Toolkit

- Available NOW
- MFOA worked with KPMG to develop a Strategic AM Policy Toolkit to support municipalities in developing this foundational document and implementing it within their organizations.

- Easy to understand guidance covering policy planning, preparation and implementation, from needs assessment and information gathering, to policy development and socialization, to roll-out and implementation
- Structured Case Studies highlighting the experience and lessons learned by a dozen Pilot Municipalities who have worked with and informed the toolkit development process
- Sample text for drafting each section of the policy
SAMP Overview

INTRODUCTION

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 THE CHALLENGE OF ASSET MANAGEMENT 07
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 REGULATION TIMELINE 10
 WHY STRATEGIC ASSET MANAGEMENT POLICIES 11
 PREPARING FOR SUCCESS 12

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 REVIEWING THE EXISTING POLICY 18
 IDENTIFYING STAKEHOLDERS 19
 BUILDING COMMITMENT 21

POLICY DEVELOPMENT

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 PROCESS FOR DEVELOPING A POLICY 24
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 GUIDING PRINCIPLES 28
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MFOA
Full day SAMP Workshops

Interactive Workshops

- **Kanata** – October 16, 2018
- **Brampton** – October 23, 2018
- **Livestream** – October 23, 2018
- **London** – October 25, 2018
- **Trenton** – October 30, 2018
- **Sudbury** – November 6, 2018
- **Thunder Bay** – November 20, 2018
Community of Practice Guide and Case Studies

• Guide to AM Communities of Practice
  • Provides practical recommendations and strategies for the development of AM Communities of Practice

• Case studies
  • Showcasing examples of AM communities of practice in Ontario
    1. Perth Community of Practice
    2. AMOntario
Benefits of an Asset Management Community of Practice

Communities of practice can be useful at all stages of the asset management planning process. Potential benefits include:

• Sharing of stories, problems, and solutions
• Development of local best practices
• Collective problem solving
• Sharing of expenses associated with third party expertise
• Reducing barriers to the development of robust asset management plans
• Developing a repertoire of resources
Questions?

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