Asset Management Planning:
Moving Forward from a Consultant/Staff Prepared Report

April 7th, 2016
Topics for Discussion

• Background and where we are today

• Snapshot of what most municipalities and their assets looked like upon your arrival

• Where we were able to take them

• What needs to be done next and what does it look like?
Topic 1: Background and where we are today
What is Asset Management?

• It’s not one thing!
• Multidisciplinary exercise
  – Accounting
  – Engineering
  – Operations
  – Finance
  – Planning
  – Others

• It’s really about “Service Management”
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

ASSET MANAGEMENT

PROVINCIAL SUBMISSIONS (AMP, FIR, GRANTS)
LONG-RANGE FINANCIAL PLAN
PERFORMANCE MEASUREMENTS
SERVICE LEVEL TRACKING & ANALYSIS
FINANCIAL DOCUMENTS
OTHER
DC BACKGROUND STUDY
Differing Views on Asset Management

• What is asset management to industry professionals? Survey was done with top answer shown below:

- Top-down/life-cycle analysis
- Other
- Communication & education
- Capital decision optimization
- Asset criticality & risk assessment
- Asset condition
- Asset inventory
- Maintenance
- Funding
- IT
- Change management
- Benchmarking
- Levels of service

<table>
<thead>
<tr>
<th>% of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>18%</td>
</tr>
<tr>
<td>16%</td>
</tr>
<tr>
<td>14%</td>
</tr>
<tr>
<td>12%</td>
</tr>
<tr>
<td>10%</td>
</tr>
<tr>
<td>8%</td>
</tr>
<tr>
<td>6%</td>
</tr>
<tr>
<td>4%</td>
</tr>
<tr>
<td>2%</td>
</tr>
<tr>
<td>0%</td>
</tr>
</tbody>
</table>

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Asset Management in the News
Municipal Asset Management: Gaining Some Perspective

- AMO estimates Ontario municipal infrastructure deficit at $60 billion

From AMO’s Submission to Infrastructure Canada 2012

Source: PMFSDR, 2008
Regulatory Context in Ontario: PSAB 3150

- Public Sector Accounting Board 3150
  - Enacted January 1, 2009
  - Mandated accounting for tangible capital assets
  - Involves lifecycle depreciation approach
Regulatory Context in Ontario: Asset Management Plans

• Ministry of Infrastructure Requirement
  – Initially covers roads, bridges, water, wastewater & housing
  – Used in determination of grants (i.e. Ont. Community Infrastructure Fund & Small Communities Fund)
  – Plan must consider condition of assets, desired service levels, mitigation & funding
Asset Management Landscape Is Evolving

• **Safe Drinking Water Act and Ontario Regulation 453/07**

• **Amendments to the DCA includes completion of an Asset Management Plan**
  – Assets must be financially sustainable over their full life-cycle

• **Gas Tax funding contingent on a completed AMP**
  – Corporate wide plan must be completed by January 1, 2017
Asset Management

Local Infrastructure

Level of Service

Financing Strategy

Asset Management Strategy
Topic 2: Snapshot of what municipalities and their assets looked like upon your arrival and where we were able to take them
What did Municipalities and Their Assets Look Like?

**Problem:**
- Knowledge held by few people which leads to a disconnect in process

**Solutions:**
- Engaged all municipal staff in process
- Staff interviews
- Data gathering involved key people from each department
What did Municipalities and Their Assets Look Like?

**Problem:**
- Inconsistent data formats

**Solutions:**
- Centralized information
- Process encouraged all data to be drawn together under one document
- Provide MS Excel documents to client upon completion for future updating
What did Municipalities and Their Assets Look Like?

**Problem:**
- Municipalities unaware of magnitude of infrastructure deficit
- Historical value of assets not a true indication of future replacement needs

**Solutions:**
- Explore all funding strategies/tools
- Communicate to staff and Council process moving forward
Problem:

- **Service Levels were undocumented**
- **Municipalities have always managed the asset and not the service**

<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>Regulated LOS</th>
<th>TARGET LOS</th>
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<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>
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<td>xx</td>
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<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>
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<td>xx</td>
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<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>xx</td>
<td>xx</td>
</tr>
<tr>
<td>Percentage of wastewater estimated to have bypassed 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>xx</td>
<td>xx</td>
</tr>
</tbody>
</table>

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

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Case Study: Town of Newmarket

- Lower tier municipality in the Region of York
- Population of 80,000
- Relatively compact community
- Responsible for local water and sewer infrastructure
### Sample Centralized Asset Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset ID</td>
<td>Department</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>Location</td>
<td>Year Emplaced</td>
</tr>
<tr>
<td>DD Eligible (Yes/No)</td>
<td>Rehab Year</td>
</tr>
<tr>
<td>Condition Rating</td>
<td>Accounting Based Useful Life</td>
</tr>
<tr>
<td>Service Level Priority</td>
<td>Consequence of Failure</td>
</tr>
<tr>
<td>Depreciated Cost</td>
<td>Replacement Cost</td>
</tr>
<tr>
<td>New Capital Additions</td>
<td></td>
</tr>
<tr>
<td>Town Owned (Yes/No)</td>
<td>Depreciation (Yes/No)</td>
</tr>
<tr>
<td>Rehab Nature</td>
<td>Condition Base Useful Life</td>
</tr>
<tr>
<td>Acquisition Cost</td>
<td>Subcomponents</td>
</tr>
</tbody>
</table>

**Accounting Based Useful Life**

**Condition Base Useful Life**

**Subcomponents**
Identified Problems

- Able to identify future pressure points
- Infrastructure which requires greatest attention
- Roads in short-medium term and stormwater over the long term
# Capital Funding Options Considered

<table>
<thead>
<tr>
<th>Category</th>
<th>In Use in Newmarket</th>
<th>Potential Annual Funding Amounts</th>
<th>Primary Use of Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Replacement</td>
</tr>
<tr>
<td>Asset Replacement Fund (ARF)</td>
<td>Yes</td>
<td>Millions</td>
<td>X</td>
</tr>
<tr>
<td>Dedicated Infrastructure Levy</td>
<td>Not at time of Study</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Recommending a Strategy (RAS) Surcharge</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Other User Fees (for capital)</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Pay-as-you-go Capital (capital funded out of operating)</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Regional Uploading</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>City of Toronto Act Charges</td>
<td>No (not permitted)</td>
<td>Millions</td>
<td>X</td>
</tr>
<tr>
<td>Local Improvement Charges</td>
<td>Minor</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Development Charges</td>
<td>Yes</td>
<td>Millions</td>
<td></td>
</tr>
<tr>
<td>Cash-in-Lieu Parkland and Parking</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td></td>
</tr>
</tbody>
</table>
## Capital Funding Options Considered

<table>
<thead>
<tr>
<th>Category</th>
<th>In Use in Newmarket</th>
<th>Potential Annual Funding Amounts</th>
<th>Primary Use of Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Replacement</td>
</tr>
<tr>
<td>Density Bonusing (Sec 37)</td>
<td>Future Secondary Plan</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Stormwater Rate</td>
<td>No</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Federal Gas Tax</td>
<td>Yes</td>
<td>Millions</td>
<td>X</td>
</tr>
<tr>
<td>Other Infrastructure Grants</td>
<td>Yes</td>
<td>Most funding has ended</td>
<td>X</td>
</tr>
<tr>
<td>Debt</td>
<td>Yes</td>
<td>Millions</td>
<td>X</td>
</tr>
<tr>
<td>PPPs, Private Contributions and Sponsorships</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X</td>
</tr>
<tr>
<td>Developer Funded Items</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td></td>
</tr>
<tr>
<td>Collaboration with Other Municipalities</td>
<td>Yes</td>
<td>Variable</td>
<td>X</td>
</tr>
<tr>
<td>Sale of Property</td>
<td>Yes</td>
<td>Hundreds of thousands</td>
<td>X (of land)</td>
</tr>
<tr>
<td>Hydro dividend</td>
<td>Yes</td>
<td>Millions</td>
<td>X</td>
</tr>
</tbody>
</table>
Measurable Outcomes

• Town was able to exercise all available funding options

• As a result of the report, Council endorsed a dedicated infrastructure levy to help pay for the repair and replacement of infrastructure

• Town looking to advance asset management internal processes
  – corporate wide strategy vs. departmental level goals
Key Recommendations

- Establish dynamic asset inventory

- Consider a more advanced software solution

- Create asset management report cards for Council and public viewing
Key Recommendations

- Move to a ten-year capital budget
- Consider a stormwater utility rate
- Review and update corporate debt policies
- Establish three categories of capital: growth, repair and replacement and enhancement
Case Study

• Various municipalities
  – Population: 2,500 to 500,000
  – Municipalities, Towns, Townships, Cities, Regions
  – Compact Community vs. Multiple Urban Centres
  – All Service Types
Project Initiation

• “I need an asset management plan to apply for provincial funding”.
  – Only includes Roads, Bridges, Water & Wastewater assets (sometimes buildings/other assets were added)

• “Why didn’t we do this in 2009 rather than PSAB 3150 Compliance?”

• One department managing the project, inviting other departments to participate.
Asset Inventory

- **Most Common:**
  
  - Multiple sources of asset data with no/little connection
    - PSAB 3150
    - Roads Needs Study
    - W/WW Rate Study
    - GIS data
    - Other…
  
  - **Some Condition Data**
    - Roads, Bridges
  
  - **Some Valuation Data**
    - Roads, Bridges, Water, Wastewater
Asset Inventory

• Challenges:
  – Creating one comprehensive asset register
  – Building Assets
    • Asset breakdown (components)
    • Valuation
    • Condition

• Outcome:
  – Able to create a detailed asset management asset register.
    • In some cases, not linked to PSAB 3150 records (short term priority)
    • Buildings: Use of engineering consultants, benchmark data
Levels of Service (LOS)

• Most Common:
  - Not much **written documentation** to compile for this section
  - Staff already doing some LOS work in day-to-day operations:
    • Minimum Maintenance Standards
    • Parks Legislation (Playgrounds)
    • Fire Equipment
    • Strategic Planning
Levels of Service (LOS)

• Challenges:
  – Most difficult section of the asset management plan process (Also, most under-utilized section)
  – Trying to define current and expected LOS can be a difficult undertaking
  – Identifying financial impact

• Outcome:
  – More high level LOS Analysis
  – In some cases, tied to average condition ratings or asset performance
# Levels of Service Examples

<table>
<thead>
<tr>
<th>Roads</th>
<th>Bridges &amp; Culverts</th>
<th>Water</th>
<th>Wastewater</th>
<th>Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet Specific Maintenance Standards.</td>
<td>Maintain specific Average Condition/BCI.</td>
<td>Meet all legislative requirements</td>
<td>Meet all legislative requirements</td>
<td>Meet legislative requirements.</td>
</tr>
<tr>
<td>Maintain Specific Average Condition/PCI.</td>
<td>Maintain adequate load limits.</td>
<td>Minimize water main breaks &amp; unaccounted for water.</td>
<td>Develop flushing program.</td>
<td>Maintain Specific Average Condition Levels</td>
</tr>
</tbody>
</table>

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[Logo]
<table>
<thead>
<tr>
<th>Department</th>
<th>Assets</th>
<th>Performance Measure Description</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Goal</th>
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</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Buildings, Equipment, Vehicles</td>
<td>Residential fire civilian injuries per 1,000 persons</td>
<td>0.0700</td>
<td>0.0230</td>
<td>0.0230</td>
<td>Minimize</td>
</tr>
<tr>
<td>Fire</td>
<td>Buildings, Equipment, Vehicles</td>
<td>Residential fire civilian fatalities per 1,000 persons</td>
<td>0.0230</td>
<td>-</td>
<td>-</td>
<td>Minimize</td>
</tr>
<tr>
<td>Fire</td>
<td>Buildings, Equipment, Vehicles</td>
<td>Number of residential structural fires per 1,000 households</td>
<td>1.0830</td>
<td>1.2320</td>
<td>1.2280</td>
<td>Minimize</td>
</tr>
<tr>
<td>Police</td>
<td>Buildings, Equipment, Vehicles</td>
<td>Total crime rate per 1,000 persons</td>
<td>69.9870</td>
<td>76.1260</td>
<td>64.5890</td>
<td>Minimize</td>
</tr>
<tr>
<td>Transportation</td>
<td>Roads</td>
<td>Percentage of paved lane km where condition is rated as good to very good</td>
<td>78.90%</td>
<td>78.90%</td>
<td>78.90%</td>
<td>Maximize</td>
</tr>
<tr>
<td>Transportation</td>
<td>Bridges &amp; Culverts</td>
<td>Percentage of bridges &amp; culverts where condition is rated as good to very good</td>
<td>66.70%</td>
<td>88.90%</td>
<td>88.90%</td>
<td>Maximize</td>
</tr>
<tr>
<td>Transportation</td>
<td>Roads</td>
<td>Percentage of winter events where response met or exceeded local service levels</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>Maximize</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Wastewater Mains</td>
<td>Number of wastewater main backups per 100 km of mains</td>
<td>17.5439</td>
<td>9.3567</td>
<td>20.3488</td>
<td>Minimize</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Buildings</td>
<td>Percentage of wastewater estimated to have by-passed treatment</td>
<td>0.28%</td>
<td>0.73%</td>
<td>1.26%</td>
<td>Minimize</td>
</tr>
<tr>
<td>Water</td>
<td>Water Mains</td>
<td>Weighted # days when a boil water advisory was issued</td>
<td>0.0001</td>
<td>-</td>
<td>-</td>
<td>Minimize</td>
</tr>
<tr>
<td>Water</td>
<td>Water Mains</td>
<td>Number of water main breaks per 100 km of pipe</td>
<td>11.0132</td>
<td>21.4192</td>
<td>26.8722</td>
<td>Minimize</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>Buildings, Vehicles</td>
<td>Number of complaints received concerning garbage &amp; recycling collection</td>
<td>15.4720</td>
<td>10.2670</td>
<td>10.2320</td>
<td>Minimize</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>Buildings</td>
<td>Number of days where a compliance order for remediation was in effect</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Minimize</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>Buildings</td>
<td>Percentage of residential solid waste diverted for recycling</td>
<td>26.20%</td>
<td>14.40%</td>
<td>14.60%</td>
<td>Maximize</td>
</tr>
<tr>
<td>Recreation &amp; Culture</td>
<td>Buildings</td>
<td>Participant hours for recreation programs per 1,000 persons</td>
<td>34.7500</td>
<td>34.7500</td>
<td>34.7500</td>
<td>Maintain or Increase</td>
</tr>
<tr>
<td>Library</td>
<td>Buildings</td>
<td>Total library uses per person</td>
<td>12.7350</td>
<td>10.6090</td>
<td>12.7350</td>
<td>Maintain or Increase</td>
</tr>
</tbody>
</table>
• Most Common:
  – Some municipalities had multi-year forecasts for capital (not operating)
  – Very little in terms of risk/criticality assessments documented, but operations staff followed some type of criticality process
  – No linkage of LOS to the multi-year forecasts
Asset Management Strategy

• Challenges:
  – Creating a scenario analysis (multiple strategies)
  – Incorporating rehabilitation programs and their effect on maintenance/replacement needs.

• Outcome:
  – Capital forecast based on remaining service life (replacement) and planned rehabilitation programs
  – Risk/Criticality ratings created, which accelerated or deferred the timing of capital needs
  – Scenarios used to show the difference between financially unfeasible and feasible options
Figure E-2
Tax Supported Assets
Scenario 2 - Based on Adjusted PSAB 3150 Asset Data

Figure E-3
Tax Supported Assets
Scenario 3 - Phased-in Replacement
## AM Strategy – Risk/Criticality

<table>
<thead>
<tr>
<th>Asset</th>
<th>Year of Construction</th>
<th>Condition (/10)</th>
<th>Probability of Failure (/10)</th>
<th>Consequence of Failure (/10)</th>
<th>Overall Risk Rating (Probability x Consequence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road A</td>
<td>1980</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>16 Medium</td>
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<tr>
<td>Road B</td>
<td>1995</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>48 High</td>
</tr>
<tr>
<td>Road C</td>
<td>2000</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>24 Medium</td>
</tr>
<tr>
<td>Road D</td>
<td>2008</td>
<td>8</td>
<td>2</td>
<td>6</td>
<td>12 Low</td>
</tr>
</tbody>
</table>

### Probability of Failure vs Consequence of Failure

<table>
<thead>
<tr>
<th>Probability of Failure</th>
<th>Insignificant</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Catastrophic</th>
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</thead>
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<tr>
<td>Rare</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>Unlikely</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>H</td>
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<td>Possible</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>E</td>
</tr>
<tr>
<td>Likely</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>E</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>E</td>
<td>E</td>
</tr>
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</table>
## High Level Consequence Assessment:

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Cost</th>
<th>Social / Health</th>
<th>Environmental</th>
<th>Service Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insignificant</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Interruptions</td>
</tr>
<tr>
<td>2</td>
<td>Small/Minor</td>
<td>Minor Impact</td>
<td>Short-term Impact</td>
<td>Minor Interruptions</td>
</tr>
<tr>
<td>3</td>
<td>Considerable</td>
<td>Moderate Impact</td>
<td>Medium-term Impact</td>
<td>Moderate Interruptions</td>
</tr>
<tr>
<td>4</td>
<td>Substantial</td>
<td>Major Impact</td>
<td>Long-term Impact – Fixable</td>
<td>Major Interruptions</td>
</tr>
<tr>
<td>5</td>
<td>Significant</td>
<td>Significant Impact</td>
<td>Long-term Impact - Permanent</td>
<td>Significant Interruptions</td>
</tr>
</tbody>
</table>
# Risk/Criticality Assessment

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Potential Consequence of Failure Variables Based on...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>Road type/class, traffic count, speed limit, access to municipality</td>
</tr>
<tr>
<td>Bridges</td>
<td>Road type, traffic count, access to municipality, load limit</td>
</tr>
<tr>
<td>Water/Wastewater Mains</td>
<td>Main size, trunk vs. local, serviced land use</td>
</tr>
<tr>
<td>Facilities</td>
<td>Type of service, service delay, back-up availability, replacement cost</td>
</tr>
<tr>
<td>Vehicles &amp; Equipment</td>
<td>Type of service, service delay, back-up availability, replacement cost</td>
</tr>
</tbody>
</table>
Financing Strategy

- Most Common:
  - Taxation: Not much of a financing forecast beyond the current year
  - Water/Wastewater: Usually some type of rate study in place
  - Some internal policies in place with respect to the use of reserves/reserve funds, debt, and other funding options
  - Very few calculations regarding an infrastructure funding gap/deficit
Financing Strategy

• Challenges:
  – Creating a financing strategy over a long-term forecast period that would be taken seriously by Council
    • Commit to a strategy, or defer to the budget process?

• Outcome:
  – Full financing strategies for all significant funding sources (taxation, water, wastewater, Boards)
    • 20 year projection, with the goal of hitting sustainable levels
  – Identification of the infrastructure funding gap
Financing Strategy

- **Capital Forecast**
  - Replacement, rehabilitation, expansion, LOS impacts

- **Debt Forecast**
  - Projected new debt with anticipated annual payments

- **Reserve / Reserve Fund Forecast**
  - Continuity schedules (contributions to/from, interest earned)

- **Operating Forecast**
  - Net operating expenses, LOS impacts, levy/revenue impacts
## Financing Strategy

<table>
<thead>
<tr>
<th>Taxation Impact</th>
<th>Water Impact</th>
<th>Wastewater Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendations:</td>
<td>Recommendations:</td>
<td>Recommendations:</td>
</tr>
<tr>
<td>3.9% increase per year for the first 10 years</td>
<td>4.9% increase per year for the first 10 years</td>
<td>5.9% increase per year for the first 10 years</td>
</tr>
<tr>
<td>1.9% increase thereafter</td>
<td>2.9% increase thereafter</td>
<td>3.9% increase thereafter</td>
</tr>
</tbody>
</table>

- Use of reserve funds (earn interest)
- Budget savings due to paying off debt go to future capital
- Annual surpluses to reserve/reserve funds
Significant Gap:

Annual Infrastructure Funding Gap Analysis (Inflated)
Infrastructure Funding Gap

Moderate Gap:

Annual Infrastructure Funding Gap Analysis (Inflated)

Current Capital with Inflation  Recommended Funding Increase  Optimal Funding


$0  $200,000  $400,000  $600,000  $800,000  $1,000,000  $1,200,000  $1,400,000
Minor Gap:

Annual Infrastructure Funding Gap Analysis (Inflated)

- Current Capital with Inflation
- Recommended Funding Increase
- Optimal Funding
Topic: What Needs to be done next and What does it look like
Build on Existing Work

• Basic hard services completed

• Broaden the scope of your plan
  – Ex. Land improvements, buildings, vehicles and equipment

• Refine your existing asset information
  – Additional details
  – Proactive/Innovative approaches
Build on Existing Work

• Time to detail your data!
  – Assets by component
  – Roof, HVAC, Structure vs. Entire building

• Condition assessment by component

• Actual inspections may warrant external assistance
### General Building Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Useful Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>40</td>
</tr>
<tr>
<td>Structure (Separation Wall)</td>
<td>40</td>
</tr>
<tr>
<td>Roof</td>
<td>20</td>
</tr>
<tr>
<td>Mechanical</td>
<td>25</td>
</tr>
<tr>
<td>Electrical</td>
<td>30</td>
</tr>
</tbody>
</table>

### Water Pump Station Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Useful Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural</td>
<td>50</td>
</tr>
<tr>
<td>Electrical</td>
<td>30</td>
</tr>
<tr>
<td>Equipment</td>
<td>30</td>
</tr>
<tr>
<td>Instrumentation Control</td>
<td>10</td>
</tr>
<tr>
<td>Mechanical</td>
<td>30</td>
</tr>
<tr>
<td>Site Works</td>
<td>50</td>
</tr>
<tr>
<td>Structural</td>
<td>100</td>
</tr>
</tbody>
</table>
Build on Existing Work

Proactive Approaches:

• Capital repair and replacement work based on:
  – Pavement Condition Index for Roads
  – Bridge Condition Index for Bridges

• Actuary approach to asset useful life

• Water and Wastewater Condition Assessments:
  – Linear: CCTV inspections
  – Plants: Physical Inspections
How about Asset Management Policies?

• More Stringent fiscal policies
  – Reserve fund management
  – Treatment of retired debt
  – Use of Alternative revenue sources
  – Annual replacement contributions 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
Weigh the importance of each project based on general guidelines:

- Health/Safety and consequence of failure
- Mandates
- Service Levels
- Strategic directions and community priorities
- Operating budget implications
- Economic Development
### Capital Prioritization Matrix

<table>
<thead>
<tr>
<th>Category</th>
<th>Description and Questions</th>
<th>Weighting /Scoring</th>
</tr>
</thead>
</table>
| Safety/Consequence of Failure   | - Extent the project reduces or eliminates immediate health, safety or environmental risks  
- Asset failure results in significant financial/environmental consequences                                                                                       | 20                  |
| Mandates                        | - Extent the project assists the municipality to:  
  a) meet new and existing targets  
  b) meet legislated requirements (Federal, Provincial, County, etc.)                                                                                               | 15                  |
| Service Levels                  | - Extent the project is required to continue to meet or provide services at:  
  a) existing level;  
  b) desired service levels  
- Extent project improves citizen access to current services  
- Project addresses critical overdue assets or assets in poor condition which are not performing to standard                                                                 | 15                  |
| Goals and Objectives            | - Meets municipality’s strategic objectives, goals and Council commitments                                                                                                                                                    | 15                  |
| Timing                          | - Is the project required immediately?  
- Is this project required to undertake future work (which may be of higher priority)?  
- can this project be undertaken with other ongoing/planned work?                                                                                                  | 10                  |
| Operating Budget Impacts        | - Project reduces future operating expenditures  
- Project increases future operating expenditures  
- No effect on operating expenditures                                                                                                                                                                                   | -5 to 10            |
| Public Support                  | - Does the project provide a community-wide benefit?  
- Strong support from public                                                                                                                                                                                                | 10                  |
| Economic Impact                 | - Extent the project enhances economic development goals.                                                                                                                                                                   | 5                   |
| Total Score                     |                                                                                                                                                                                                                         | 100                 |

- **Valuable when making capital investment decisions**

- **Formal and consistent approach**

- **Funding now or later?**
Recognizing the Reality

- Some jurisdictions outside Ontario are in worse shape.
- Ongoing replacement and emergency work is required and must be financially planned.
- Not all targets are achievable today.
- Council and public may not buy in to concept.
Next Steps

• Key Topics
  – Asset Management is a Journey
  – The Asset Register
  – Levels of Service Driven Asset Management
Asset Management Journey

- Asset Management Strategy
- Asset Management Policy
- Integration
- Updates & Improvements
- Existing Data, Processes, etc.

- Budget
- Long-term Planning
- PSAB 3150
- Strategic Planning
- Operational Procedures

HEMSON
The Asset Register

• **Objective:** Increase (or maintain) the accuracy of the asset register
  – How much depends on cost/benefit to the municipality

• **Areas of Focus:**
  – Valuation (Replacement Cost)
  – Level of Detail (components/segments)
  – Remaining Service Life (RSL):
    • Recording transactions (i.e. betterments)
    • Condition assessments
## Valuation (Replacement Cost)

<table>
<thead>
<tr>
<th>Current Asset (“Reproduction”)</th>
<th>Replacement Asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment (old regulations)</td>
<td>Equipment (new regulations)</td>
</tr>
<tr>
<td>Asphalt Sidewalk (narrow)</td>
<td>Concrete Sidewalk (wider)</td>
</tr>
<tr>
<td>Single Lane Bridge</td>
<td>Double Lane Bridge</td>
</tr>
<tr>
<td>Streetlights / Traffic Lights</td>
<td>LED Technology</td>
</tr>
<tr>
<td>Facility Components</td>
<td>Green or Energy Efficient Alternatives</td>
</tr>
</tbody>
</table>
What to Include in Asset Cost?

PSAB 3150 states that costs directly associated with preparing a tangible capital asset for its intended use can be included as part of the historical cost of the asset. While the capitalization of general administrative overhead is not permitted, the following are examples of valid costs to be included:

- Original cost to purchase, construct or develop the tangible capital asset;
- Installation and assembly costs (payroll costs of staff directly involved in installation/assembly, contracted services);
- Initial delivery costs (freight, duty, transportation services);
- Site preparation costs (demolition costs, environmental cleanup);
- Initial testing costs to ensure the asset is functioning properly (payroll costs of staff directly involved in testing, contracted services);
- Professional fees (engineering, legal, architect, environmental); and
- Internal design and inspection costs (payroll costs of staff while working directly on capital asset design/inspection).
# Asset Components

<table>
<thead>
<tr>
<th>Whole Asset</th>
<th>Component / Segment</th>
<th>More Detailed Component / Segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUILDING A</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>EQUIP &amp; FURN.</td>
<td>ELECTRICAL</td>
</tr>
<tr>
<td></td>
<td>SPECIAL CONST.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SITE WORK</td>
<td></td>
</tr>
<tr>
<td>LOCAL ROAD A</td>
<td>ROAD SURFACE</td>
<td>CURB</td>
</tr>
<tr>
<td>COLLECTOR ROAD B</td>
<td>ROAD BASE</td>
<td>GUTTER</td>
</tr>
<tr>
<td>ARTERIAL ROAD C</td>
<td>OTHER</td>
<td>SIDEWALKS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STREET LIGHTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TRAFFIC LIGHTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIGNS</td>
</tr>
<tr>
<td>BRIDGE A</td>
<td>BRIDGE DECK</td>
<td>SURFACE</td>
</tr>
<tr>
<td></td>
<td>BRIDGE STRUCTURE</td>
<td>RAILS</td>
</tr>
<tr>
<td></td>
<td>OTHER</td>
<td></td>
</tr>
</tbody>
</table>
Asset Components / Segments

---ASSET MANAGEMENT---

Local Roads  |  Road A  |  Segment A
Rural Roads  |  Collector Roads  |  Road B  |  Segment B
Municipal Roads  |  Urban Roads  |  Arterial Roads  |  Road C  |  Segment C

Impacts LOS analysis

How is this defined?
What is your process for recording betterments?
- In many cases, updating RSL is missed for the asset being improved.
- What about impact on other assets?
- Example: Road resurface project:
  - **Scenario 1: Road segment is recorded as a whole asset**
    - A betterment?
    - Partial disposal? Impact on replacement value?
    - Impact on RSL of road?
  - **Scenario 2: Road is broken down into surface/base components**
    - Asset Replacement (with disposal)
    - New useful life for road surface
    - Road Base RSL Impact?
Updating Remaining Service Life (RSL)
Asset Management Choices: Budget Driven or Service Driven?

Budget Driven Framework
5 years ago

- Service Level
- Funding Programs
- Budget

Service Driven Framework
Today

- Service Level
- Funding Programs
- Budget
Levels of Service
What Are They and How do They Work?

Measuring levels of service

- **Community expectations**: Measured through engagement, consultation and surveys.
- **Strategic levels of service**: Measured through broad tangibles like comfort, accessibility, reliability of service and safety.
- **Technical levels of service**: Measured through technical attributes like responsiveness and asset condition to deliver strategies.
Service relates to the end use of the provision of an asset.

- e.g. We provide a safe, quiet and habitable building with seating spaces and shelving to allow citizens to read and borrow books.

Level relates to the quality, quantity, reliability, responsiveness, environmental acceptability and costs associated with providing the service.

- e.g. Library will seat at least 16 people, have the capacity to store 3,000 books, will have adequate lighting and access, car parking for 6 and will be open 3 days a week.
- We will respond to any emergency mechanical repair like taps, toilets or air-conditioning within 2 working days.
## Technical Levels of Service

### 4.0 SEALED ROADS SERVICE TARGETS

#### 4.1 Potholes

**We look out for:**
Chunks of pavement material separate and pulled out by the wheels of passing vehicles resulting in a hole.

<table>
<thead>
<tr>
<th>Intervention Level</th>
<th>Recommended Process</th>
<th>Service Response Time</th>
<th>Service Performance Targets</th>
</tr>
</thead>
</table>
| Pothole Depth within Cycle way, Wheel Path, or bend >150mm in depth and/or diameter 0.5m | ▶ Inspection  
▶ Pothole Repair | ▶ 2 days for Arterial Roads  
▶ 2 days for Sub-Arterial Roads  
▶ 5 days for Collector Roads  
▶ 10 days for Local Roads | 90% |
| Any other Pothole  |                                          | 2 days for Arterial Roads  
▶ 5 days for Sub-Arterial Roads  
▶ 10 days for Collector Roads  
▶ 20 days for Local Roads | 90% |
LOS Scenarios

- What different LOS approaches result in moving towards a sustainable position?
  - Increasing/lowering specific LOS
    - Reactive versus proactive maintenance?
    - Maintenance vs. rehab vs. replacement?

![Graph showing future replacement cost for different assets over the years.](image)

**Tax Supported Assets**
**Scenario 2: Replacement Year Based on Condition and Risk**

- Machinery/Equipment/Furniture
- Vehicles
- Land Improvements
- Buildings
- Storm sewer
- Bridges
- Roadwork

*Year of Replacement*
*Future Replacement Cost (Inflated)*
Conclusion

- More and more requirements to have an asset management plan
- You will never be finished your asset management plan
  - Updates
  - Improvements
- Use an approach that makes sense to you
  - Most benefit of having an asset management plan should be internal to your organization
Questions?