

Developing Your Local Government Asset Management Plan

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Agenda

- 1) PSD Overview – What we do
- 2) Asset Management – an Overview
- 3) Miramichi Staff – Project Overview
- 4) Miramichi's Asset Management Plan
- 5) Asset Management Roadmap Process
- 6) Benefits of Asset Management

What we do

1. Research

- Public Sector Digest - monthly publication written for public sector practitioners
- PSD Webinars
- PSD Municipal Benchmarking – The National Infrastructure Database

2. Technology

- Developed for local governments to tackle asset management, financial planning/budgeting, and performance measurement

3. Advisory

- Asset Management Plans (AMPs)
- Asset Management Roadmaps
- Water & Wastewater Rate Studies

Asset Management – An Overview




Asset Management is Service Management

- The Asset is the conduit for the service
- Infrastructure provides services that bring our cities to life
 - Pipes provide a clean drinking water service
 - Roads provide a transportation service
 - Buses provide a public transit service
 - Facilities / Parks provide recreation programs and services



A NEW Framework (service centric):

- 
- What are the organizational objectives?
 - What assets are owned and what services do they provide
 - What is the assets value (to the organization and the community)?
 - What is the asset's impact to service delivery (performance and risk)?
 - What are the life cycle needs and available options?
 - What are the work/budget prioritisation processes?
 - What are the financial strategies?
 - What level of service is attainable?

Asset Management Discipline

It involves:

- Processes, procedures and practices to assist and define the management of infrastructure
- Achieving total lowest cost of ownership
- Established measures for performance, risk and cost



Asset Management Discipline

It includes:

- A sophisticated and coordinated effort
- A multi - disciplined team
- Ultimately public engagement and input



Miramichi – Project Overview

- 1) Why an Asset Management Plan
- 2) Challenges / Opportunities
- 3) Status / Findings



The City of Miramichi Asset Management Plan



Gas Tax Fund agreement (New Brunswick)

- **All Municipalities will have to produce a Capital Asset Management Plan (CAMP) by March 31, 2018, which will include, at a minimum:**
 - a complete inventory of the infrastructure assets
 - a report on the physical condition of the infrastructure
 - a list of priorities for lifecycle management based on the GTF recipient's needs and planning.
- Capital Asset Mgmt. Plans can be funded with your Gas Tax Funds
- If any reports are missing, subsequent payments will be withheld until those reports have been duly received.

AMP - The Key Components



State of the Infrastructure Report

A New Way of looking at the same Infrastructure



What assets are Owned / What is the Value?

Road Network Replacement Value

| Asset Type | Asset Component | Quantity/Units | 2015 Replacement Method | 2015 Overall Replacement Cost* |
|--------------|---------------------|-----------------------------|--------------------------|--------------------------------|
| Road Network | Curb & Gutter | 78,175.76 m | \$90/m | \$7,035,819 |
| | Road Base | 1,864,099.79 m ² | \$13/m ² | \$24,247,668 |
| | Road Surfaces | 1,908,755.72 m ² | \$47/m ² | \$89,711,519 |
| | Shoreline | 3 | CPI Tables | \$256,689 |
| | Sidewalks | 76,287.01 m ² | \$50-\$90/m ² | \$5,133,938 |
| | Streetlights | 199 | CPI Tables | \$1,145,325 |
| | Traffic Controllers | 11 | CPI Tables | \$197,827 |
| | Traffic Lights | 11 | CPI Tables | \$802,092 |
| | | | | \$128,530,877 |

Overall Asset Rating

Grading Scale: Condition vs. Performance

| Star Rating | Letter Grade | Description |
|-------------|--------------|---|
| ★★★★★ | A | Excellent: No noticeable defects |
| ★★★★ | B | Good: Minor deterioration |
| ★★★ | C | Fair: Deterioration evident, function is affected |
| ★★ | D | Poor: Serious deterioration. Function is inadequate |
| ★ | F | Critical: No longer functional. General or complete failure |

Grading Scale: Funding vs. Need

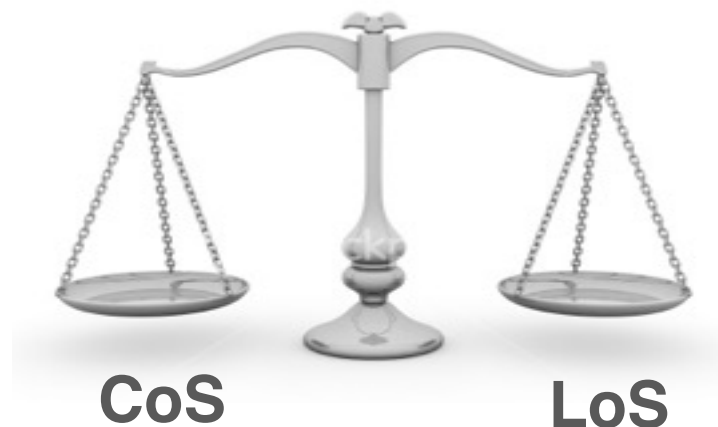
| Star Rating | Letter Grade | Description |
|-------------|--------------|-------------------------------|
| ★★★★★ | A | Excellent: 91 to 100% of need |
| ★★★★ | B | Good: 76 to 90% of need |
| ★★★ | C | Fair: 61 to 75% of need |
| ★★ | D | Poor: 46 - 60% of need |
| ★ | F | Critical: under 45% of need |

Desired Levels of Service

- Set desired levels of service for each infrastructure program
- Use performance measures to track targets
- Establish current performance and expected performance
- A.M. plan should outline how to bridge any gaps.

Levels of Service are often based on:

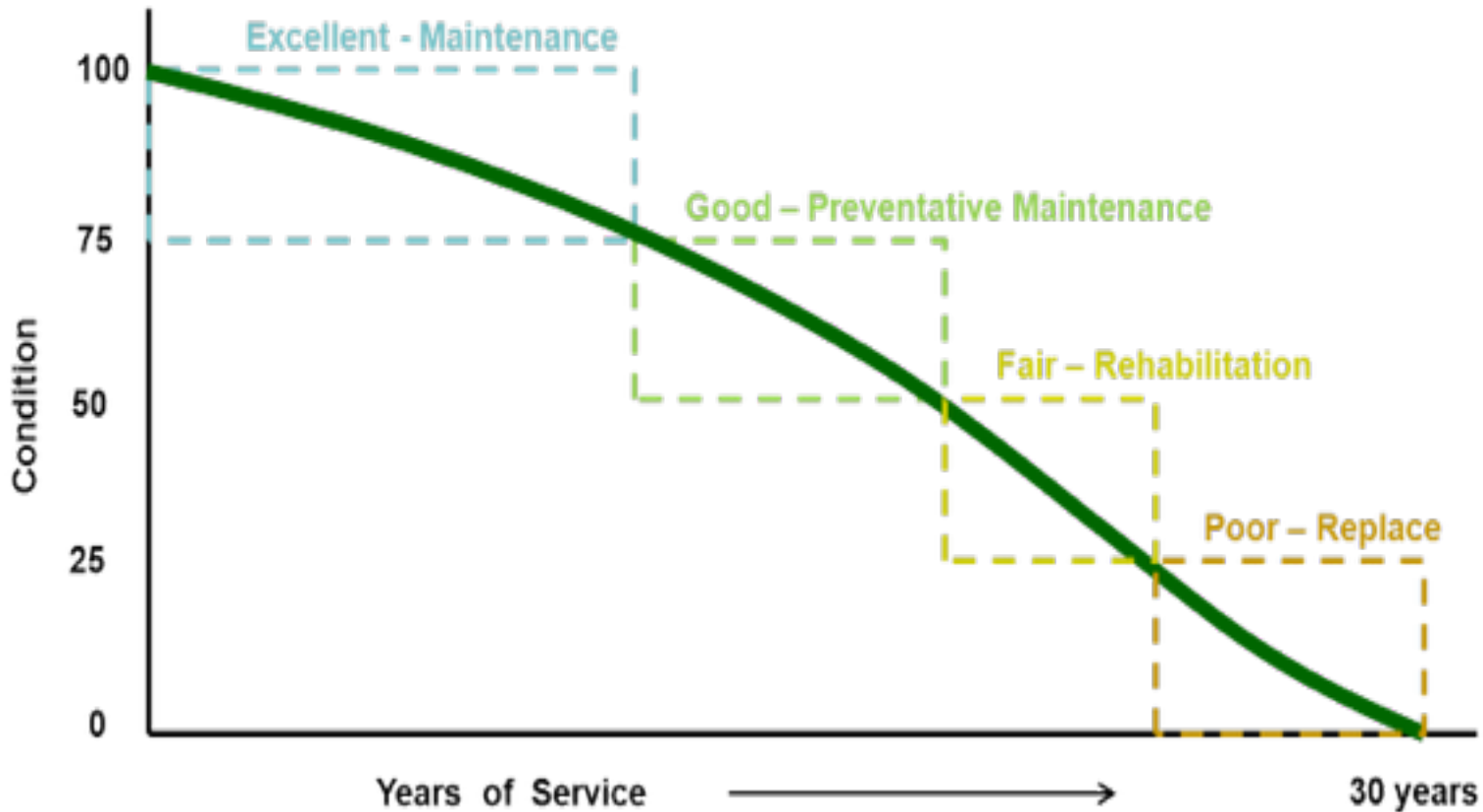
- Community Expectations
- Strategic and Corporate Goals
- Legislative Requirements
- Expected Asset Performance



Asset Management Strategy

- A set of planned actions that will enable the assets to provide the desired level of service, while managing risk, at the lowest cost.
- Methodologies and practices used to produce a 10 year infrastructure plan

Life Cycle Management Review



Risk / Criticality Assessment

$$\text{Risk} = \text{Probability of Failure} \times \text{Consequence of Failure}$$



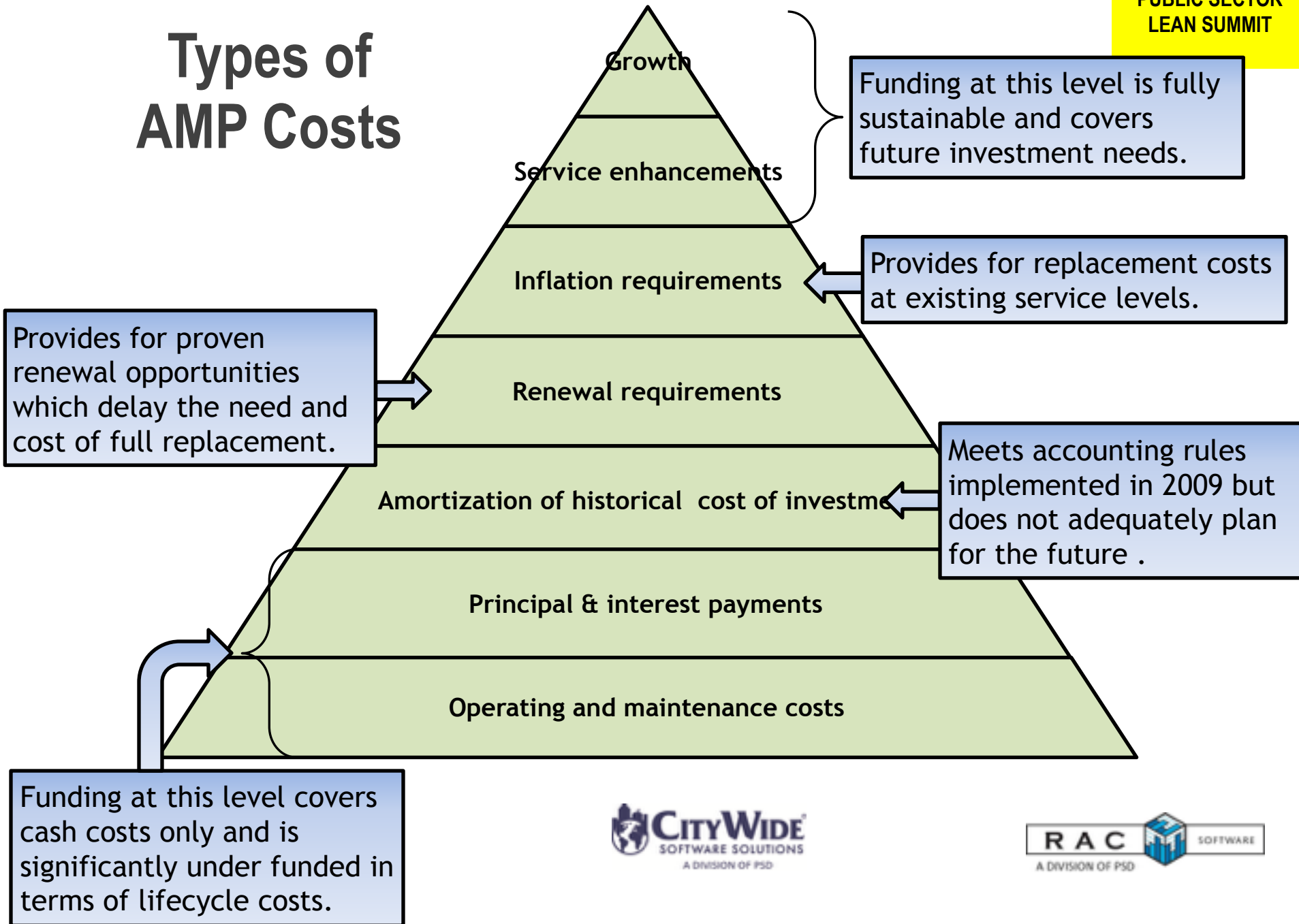
| Consequence of Failure | Probability of Failure | | | | | |
|------------------------|--|---|---|--|--|------|
| | 1 | 2 | 3 | 4 | 5 | |
| High (5) | 4 Assets 328.75 m, units \$760,297.82 | 8 Assets 86.37 m, units \$4,414,769.16 | 14 Assets 2,633 units, m \$16,111,284.80 | 2 Assets 2 units \$7,186,480.44 | 4 Assets 4 units \$509,423.40 | |
| 4 | 90 Assets 320,340.34 m2, m, units \$26,091,604.22 | 11 Assets 43,939.7 m2, units \$6,053,130.56 | 9 Assets 42,914.8 m2, units, m \$4,680,997.49 | 3 Assets 12,119 m2, units \$1,472,519.24 | 3 Assets 3 units \$143,561.93 | |
| 3 | 123 Assets 648,303.45 m2, units, m \$33,739,314.91 | 17 Assets 199,556.4 m2, units \$11,725,286.41 | 18 Assets 2,014 units, m \$1,037,947.22 | 2 Assets 807.4 m2, units \$396,470.25 | 5 Assets 5 units \$408,285.74 | |
| 2 | 18 Assets 10,362.2 m2, units, m \$852,786.27 | 6 Assets 134 units \$389,786.88 | 7 Assets 7 units \$496,670.12 | 4 Assets 33 units \$315,695.39 | 4 Assets 1,481 units, m \$614,839.84 | |
| 1 | 97 Assets 573,912 m2, units \$11,803,415.88 | 164 Assets 1,409 units, m2 \$950,217.91 | 29 Assets 2,690.7 m2, units, m \$129,565.88 | 960 Assets 967 units \$333,598.77 | 154 Assets 23,461.76 m2, units, m \$1,808,180.54 | |
| Low | 1 | 2 | 3 | 4 | 5 | High |

Why Does an AMP Need a Financial Strategy?

- **The main risks to community financial sustainability:**
 - The cost of infrastructure
 - Providing levels of service that don't reflect fiscal capacity



Types of AMP Costs

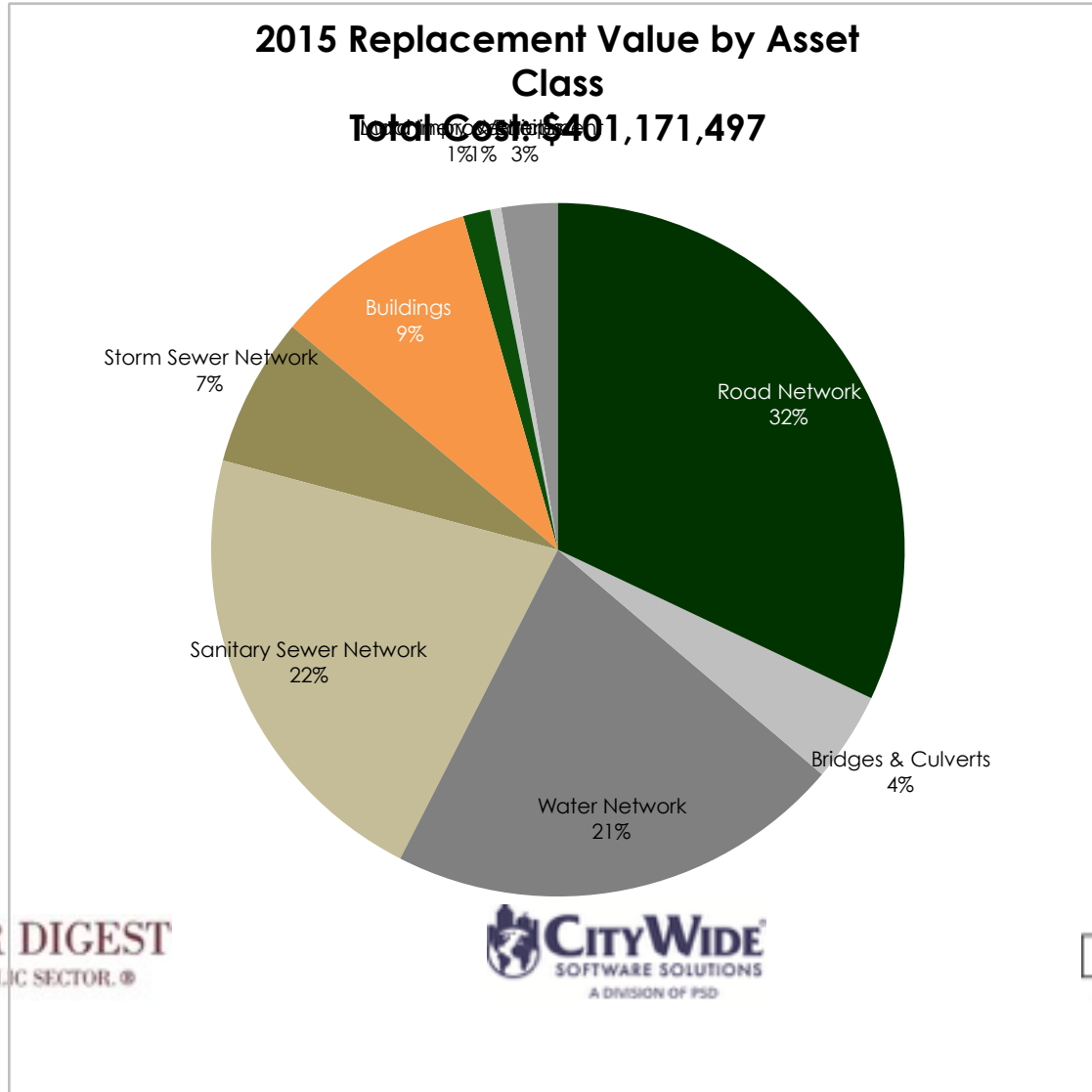


The City of Miramichi Asset Management Plan

Findings & Communications



Miramichi - Asset Replacement Value



Infrastructure Report Card

| Miramichi Infrastructure Report Card | | | |
|---|---------------------------|------------------|---------------|
| Asset Category | Condition vs. Performance | Funding vs. Need | Overall Grade |
| Road Network | D+ | F | F |
| Bridges & Culverts | D | F | F |
| Water Network | C | F | F |
| Sanitary Sewer Network | C | F | F |
| Storm Sewer Network | D | F | F |

Infrastructure Report Card

| Asset Category | Condition vs. Performance | Funding vs. Need | Overall Grade |
|-----------------------|---------------------------|------------------|---------------|
| Buildings | F | D | F |
| Land Improvements | D+ | F | F |
| Machinery & Equipment | D | A | C+ |
| Vehicles | D+ | D | D |

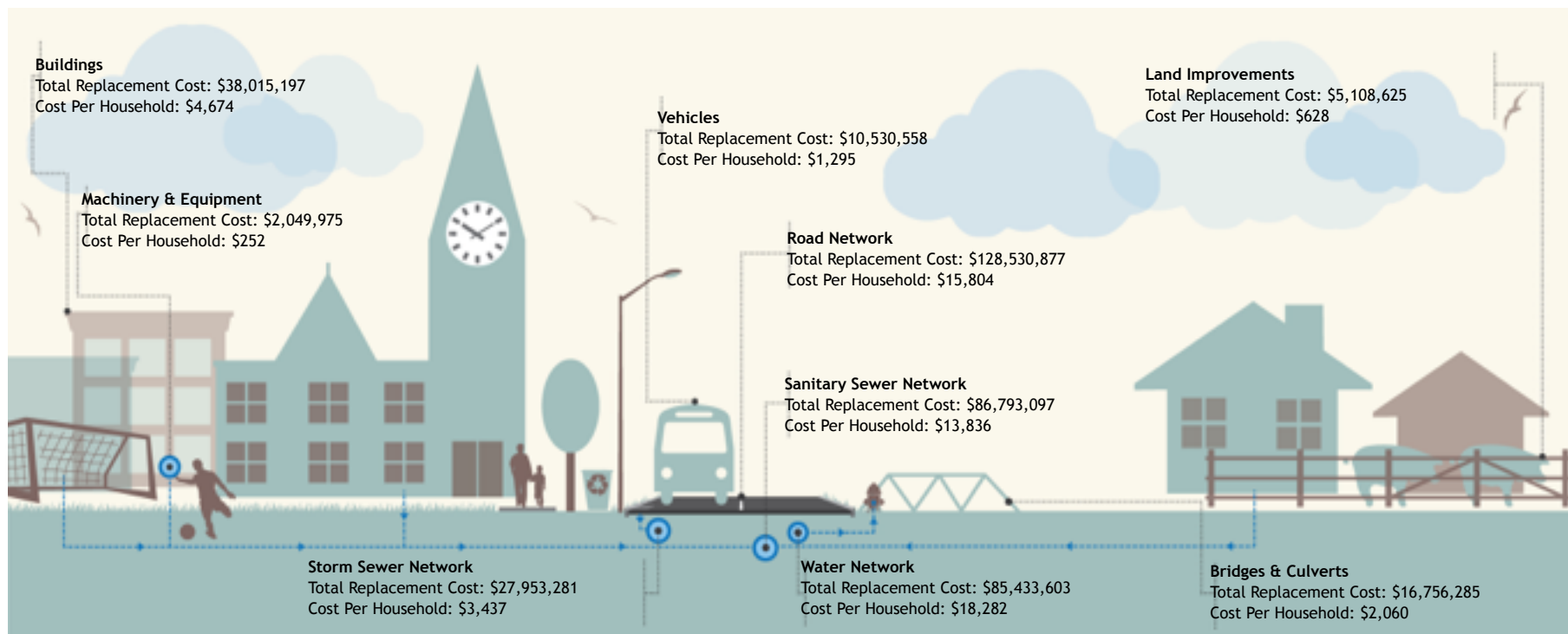
Miramichi Financial Recommendations (Tax Levy)

| TAX CHANGE REQUIRED FOR FULL FUNDING | |
|--------------------------------------|--------------------------------------|
| ASSET CATEGORY | TAX CHANGE REQUIRED FOR FULL FUNDING |
| ROAD NETWORK | 17.1% |
| BRIDGES & CULVERTS | 1.1% |
| STORM SEWER NETWORK | 3.3% |
| BUILDINGS | 1.8% |
| LAND IMPROVEMENTS | 0.7% |
| MACHINERY & EQUIPMENT | -0.2% |
| VEHICLES | 2.1% |
| TOTAL | 25.9% |

| REVENUE OPTIONS FOR FULL FUNDING | | | | |
|----------------------------------|--------------|----------|----------|----------|
| | TAX REVENUES | | | |
| | 5 YEARS | 10 YEARS | 15 YEARS | 20 YEARS |
| ANNUAL TAX INCREASES REQUIRED | 5.2% | 2.6% | 1.7% | 1.3% |

Infrastructure Replacement Cost Per Household

Total: \$60,268 per household

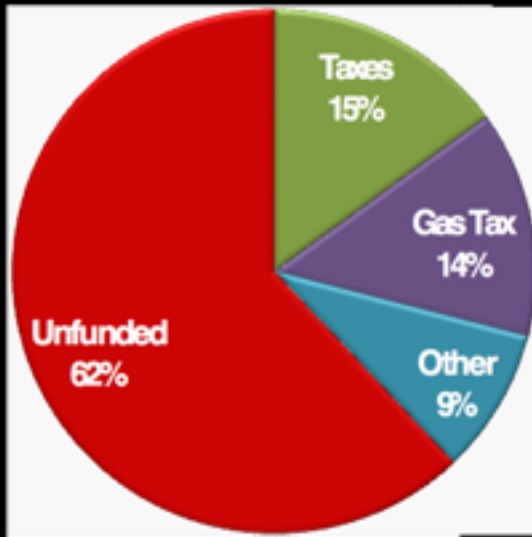


PSD Findings After 120 Plus AMPs

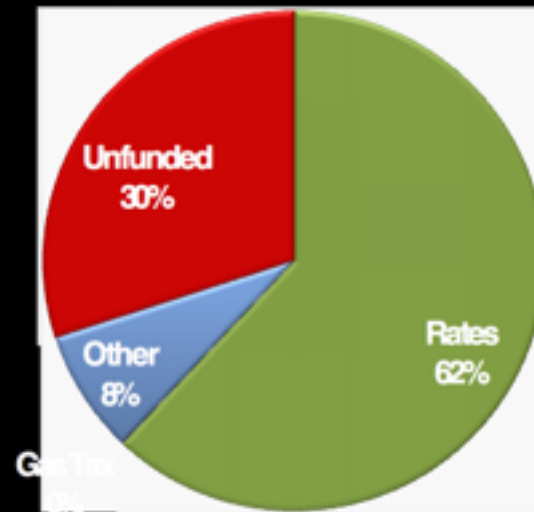


Funding Analysis from over 120 AMPS

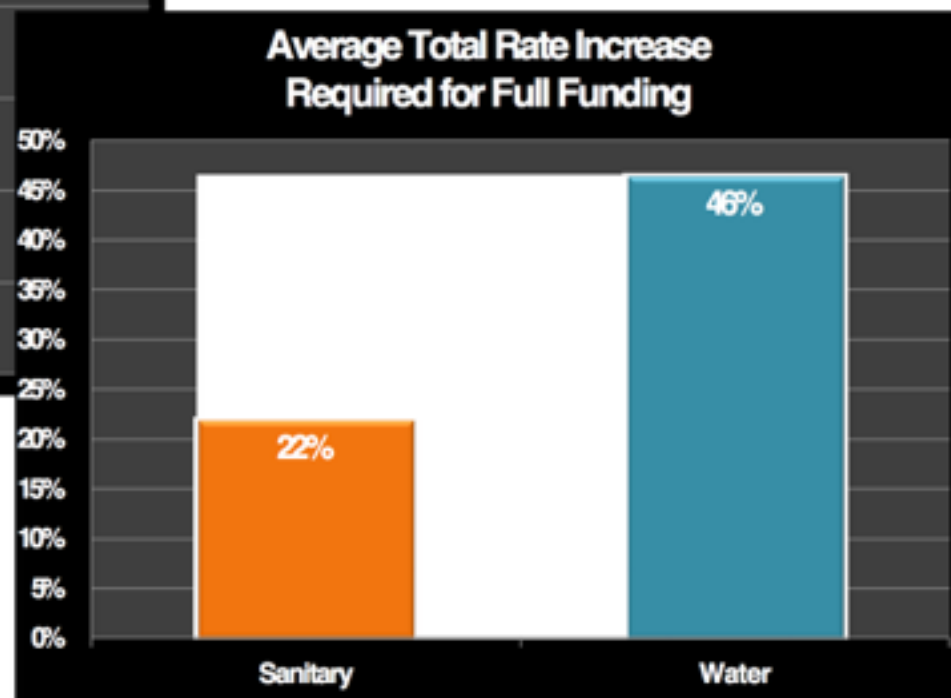
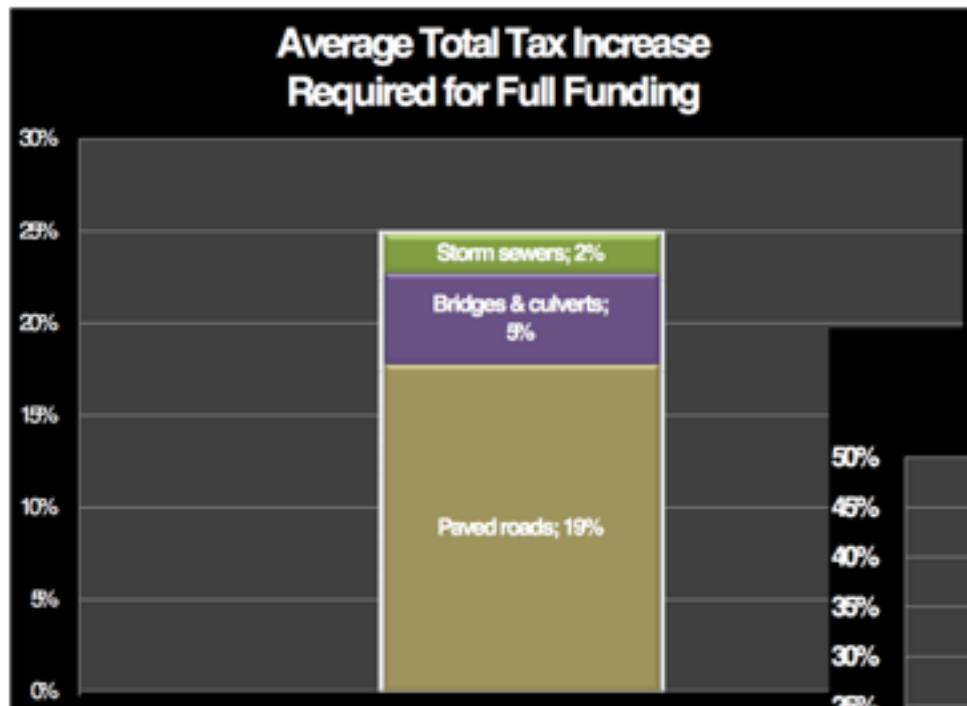
Funding of Tax Based Categories



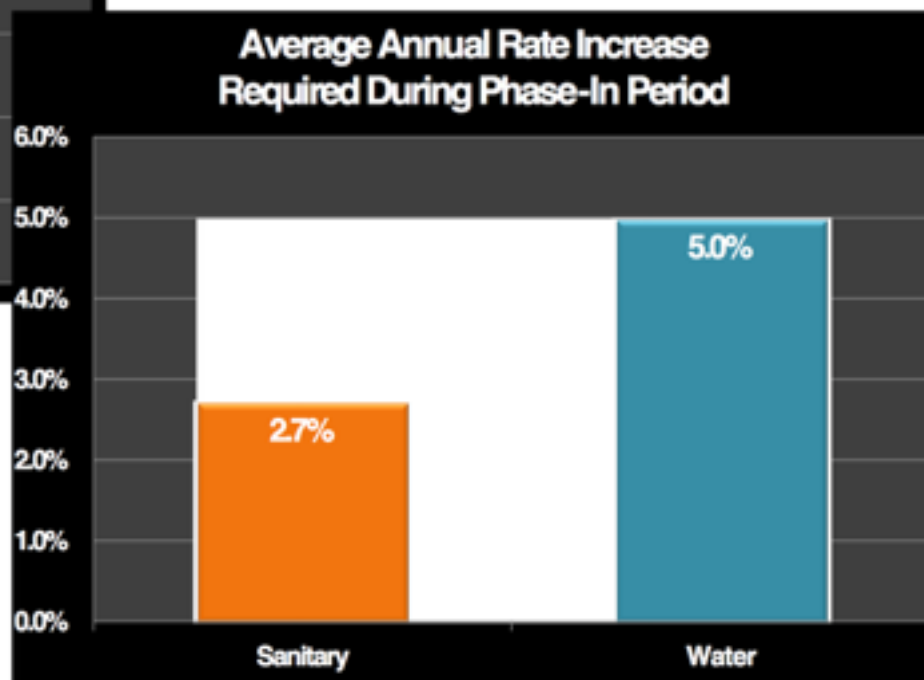
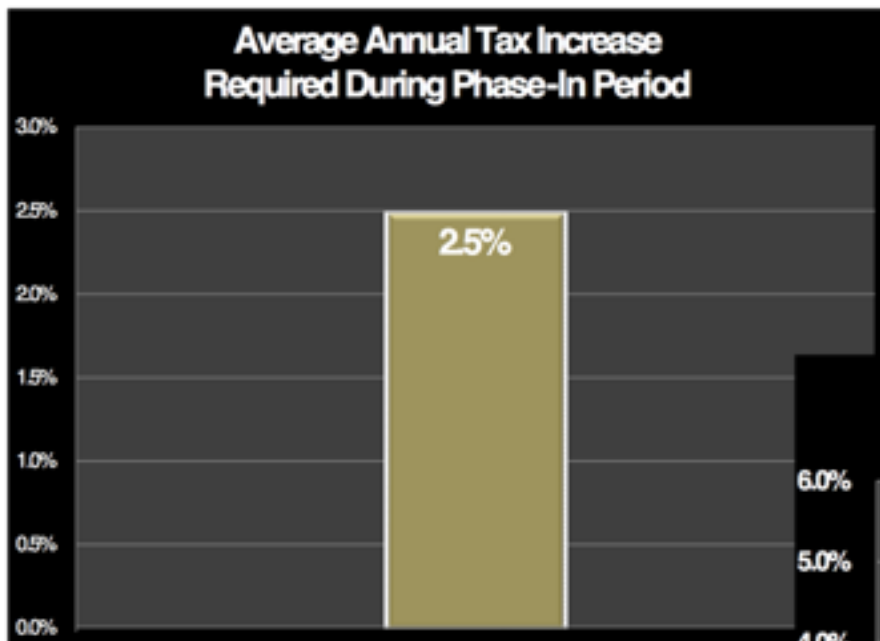
Funding of Rate Based Categories



Funding Analysis from over 120 AMPS



Funding Analysis from over 120 AMPS



Asset Management Roadmap Process



PSD - Asset Management Road Map Process



- Provides continuous improvement of A.M. practices
- It breaks out the core components of A.M. for separate analysis
- Builds Staff Level Capacity
- Cross Departmental Collaboration

Road Map Components

- Organizational Cognizance
- Data and information templates
- Condition assessment development
- Legislative / regulatory requirements
- Risk and criticality model development
- Life cycle analysis methodologies
- Project & Program Prioritization
- Financial Strategy Analysis
- Level of Service Model Development



Current State of Maturity Analysis (Critical Activities Path)



- Self Assessment Tests
- Departmental Interviews
- Collaborative Project



A.M. Policy Development

- The Problem / issue that needs to be addressed
 - The purpose of this policy is to ensure the development of the Cities' asset management program, including roles and responsibilities, to facilitate logical and informed decision making for the management of the City's infrastructure to support the delivery of sustainable community services.”
- The Players - the individuals and/or groups involved
- A course of action and/or principles
- **Alignment to organizational objectives and goals**



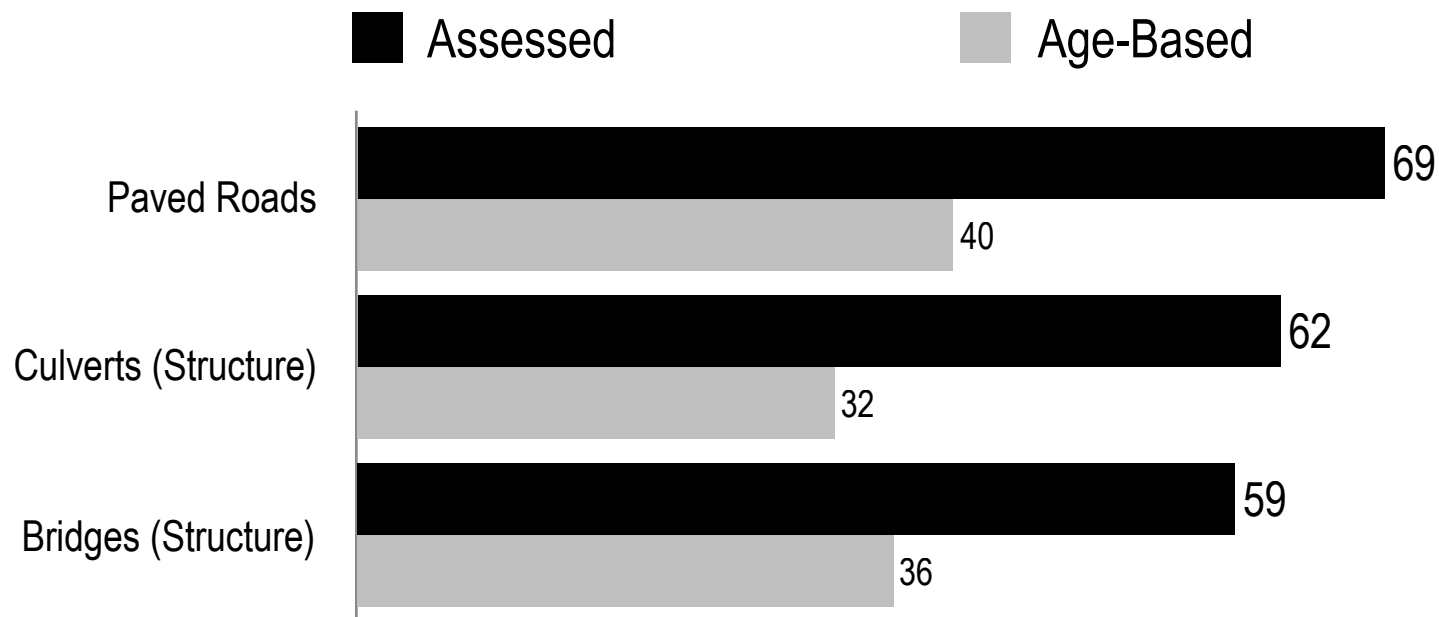
The Evolution of Asset Data



- Asset ID, location, description data
- Valuation data
- Condition data
- Performance (demand and capacity) data
- Risk data
- Maintenance data
- Life cycle activity data
- Optimised decision data
- Service based data

Asset Age vs Asset Condition

Assessed vs. Age-Based: **Average Asset Condition Rating (0-100)**



Condition Assessment Program Development

Condition assessment by asset type will be reviewed:

- Type of capture
 - Field check or road patrol
 - Condition assessment
 - Detailed engineering study
- Cycle of Capture
- Type of Index or reporting format.



Risk and Criticality Model Development

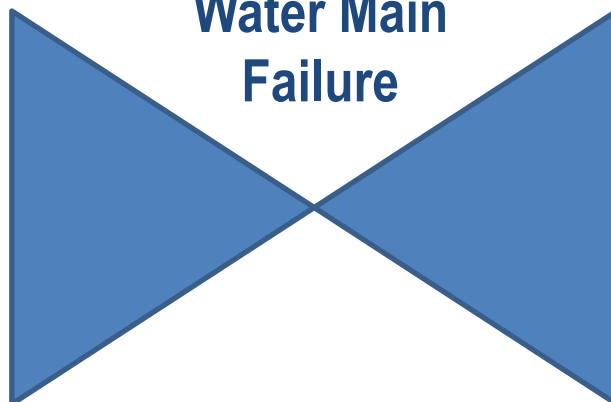
Probability of Failure

Age / Condition

Soil Corrosion

Stray currents

Water Main Failure



Consequence of Failure

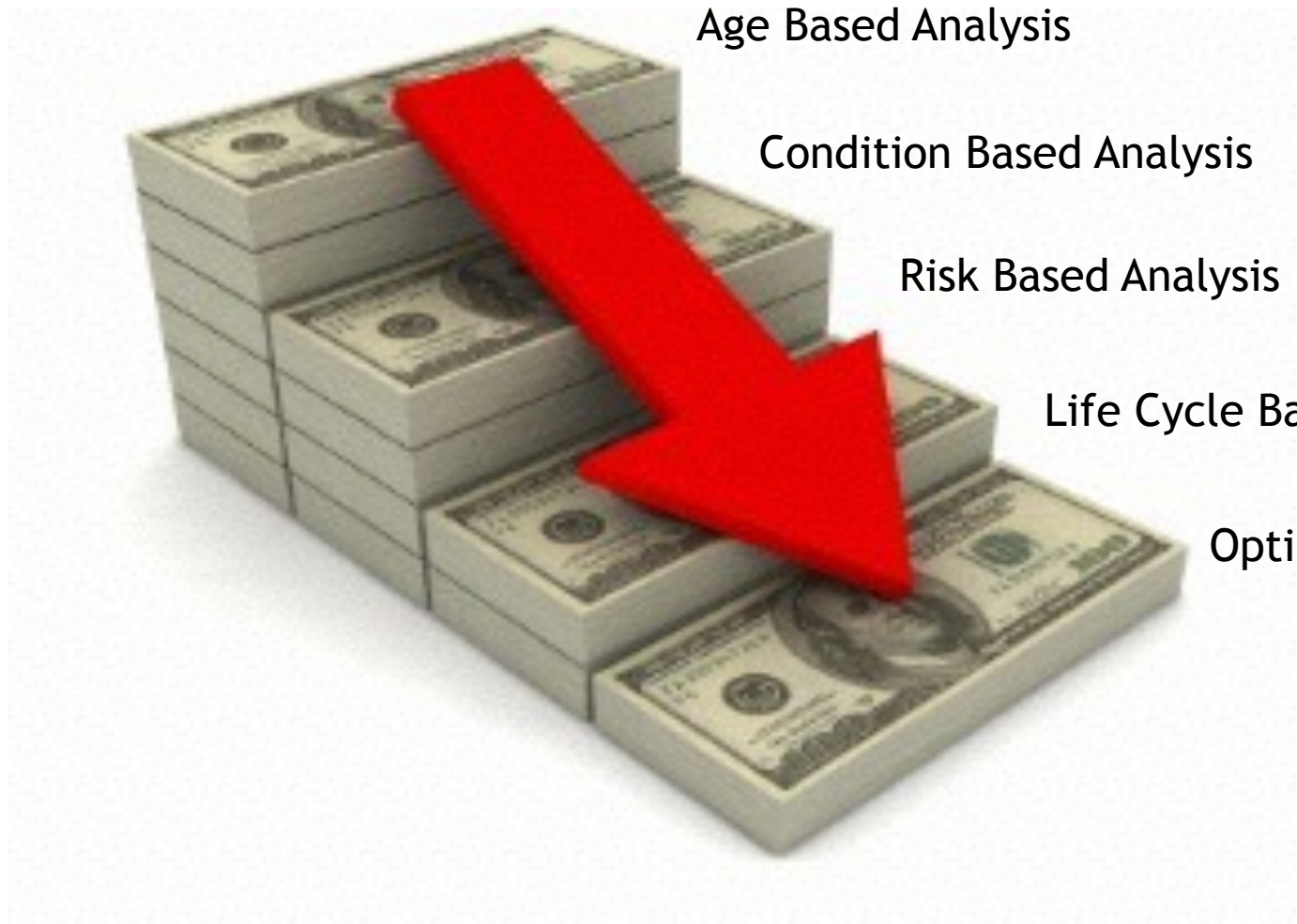
- Cost to Repair
- Disruption to public
- Impact to environment

Life Cycle Framework Development

ASSET CONDITION AND RELATED WORK ACTIVITY: PAVED ROADS

| CONDITION | CONDITION RANGE | WORK ACTIVITY |
|---|-----------------|---|
| EXCELLENT CONDITION (MAINTENANCE ONLY PHASE) | 100-76 | <ul style="list-style-type: none"> MAINTENANCE ONLY |
| GOOD CONDITION (PREVENTATIVE MAINTENANCE PHASE) | 75 - 51 | <ul style="list-style-type: none"> CRACK SEALING EMULSIONS |
| FAIR CONDITION (REHABILITATION PHASE) | 50 -26 | <ul style="list-style-type: none"> RESURFACE - MILL & PAVE RESURFACE - ASPHALT OVERLAY SINGLE & DOUBLE SURFACE TREATMENT (FOR RURAL ROADS) |
| POOR CONDITION (RECONSTRUCTION PHASE) | 25 - 1 | <ul style="list-style-type: none"> RECONSTRUCT - PULVERIZE AND PAVE RECONSTRUCT - FULL SURFACE AND BASE RECONSTRUCTION |
| CRITICAL CONDITION (RECONSTRUCTION PHASE) | 0 | <ul style="list-style-type: none"> CRITICAL INCLUDES ASSETS BEYOND THEIR USEFUL LIVES WHICH MAKE UP THE BACKLOG. THEY REQUIRE THE SAME INTERVENTIONS AS THE “POOR” CATEGORY ABOVE. |

How much money do we need?



Age Based Analysis

Condition Based Analysis

Risk Based Analysis

Life Cycle Based Analysis

Optimised Analysis

Trends influencing LOS

- Climate change
- Aging infrastructure
- Uncertainty in growth forecasts
- Declines in water consumption
- Socio-Political expectations
- Declining senior gov't grants



Financial Strategy Roadmap

- 1) Determine your AMP financial requirements based on replacement costs
- 2) Analyse your financial capacity
- 3) Determine how your numbers relate to your comparators
- 4) Develop scenarios for consideration
- 5) Make recommendations



Benefits Realized from Good Asset Management Practice

- Council awareness and involvement in the challenges of addressing the infrastructure deficit.
- Establishment of long term capital programs optimizing limited available funds
- Better communication amongst internal stakeholders and a focus on continuous improvement.
- The establishment of alternate technologies = significant cost savings

Benefits Realized from Good Asset Management Practice

- Better alignment between finance and engineering (PW)
- The robust AMP and process will be a catalyst of conversation, generating ideas, changing philosophies, and starting innovations for better management practices.
- A review of management practices & policies to better align with sustainable goals.



Questions

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