


AMSC Education Session: Water Initiative

the Future is Local



AUMA CONVENTION & AMSC TRADE SHOW Calgary TELUS Convention Centre September 28-30, 2011

AMSC Water Initiative

VISION

- To develop a line of water services to strengthen municipal water system infrastructure, which will:
 - Support safe and secure drinking water;
 - Increase the efficiency of water system; and
 - Respond to the water system challenges of Alberta municipalities.

OBJECTIVE

- The AMSC Water Initiative potentially could include:
 - Water audits;
 - Water distribution system repairs and maintenance;
 - Leak management; and
 - Metering and monitoring.

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Municipal Water & Wastewater Systems

BACKGROUND

- The 2011 AMSC Water and Wastewater Survey was administered in early 2011 to all 277 Regular members with a 44% response rate.

KEY CHALLENGES

- Financial capital for maintenance and repairs;
- Financial capital for system upgrades to comply with government legislation/regulation; and
- Operational capacity within small Alberta municipalities.



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Current Strategic Context

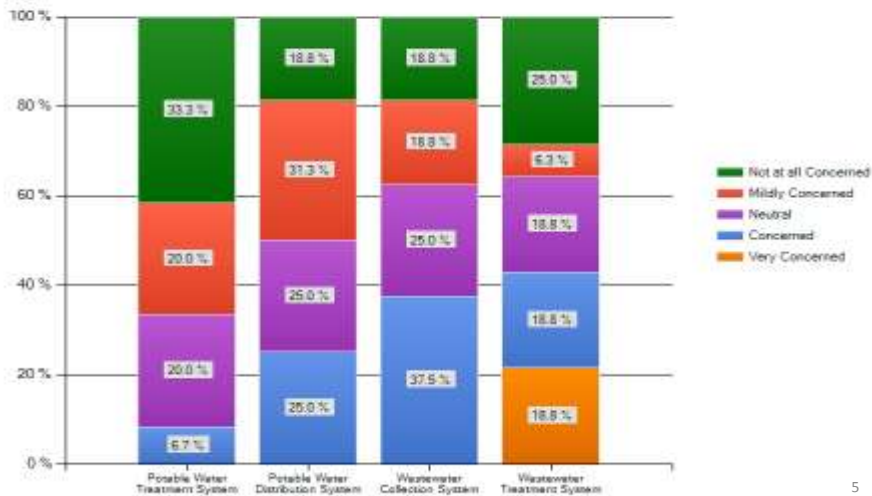
Survey Results



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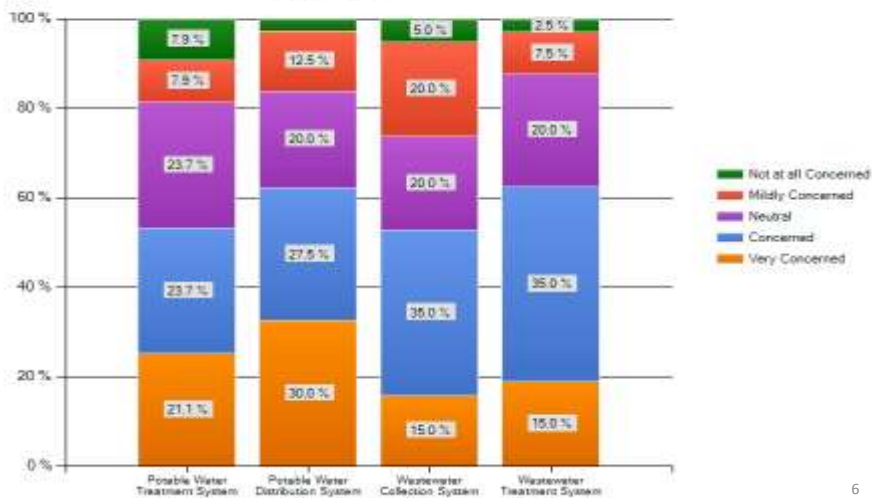
Municipal Concern About The Long-term Financial Stability of Water and Wastewater Infrastructure (Municipalities with Populations Over 10,000)



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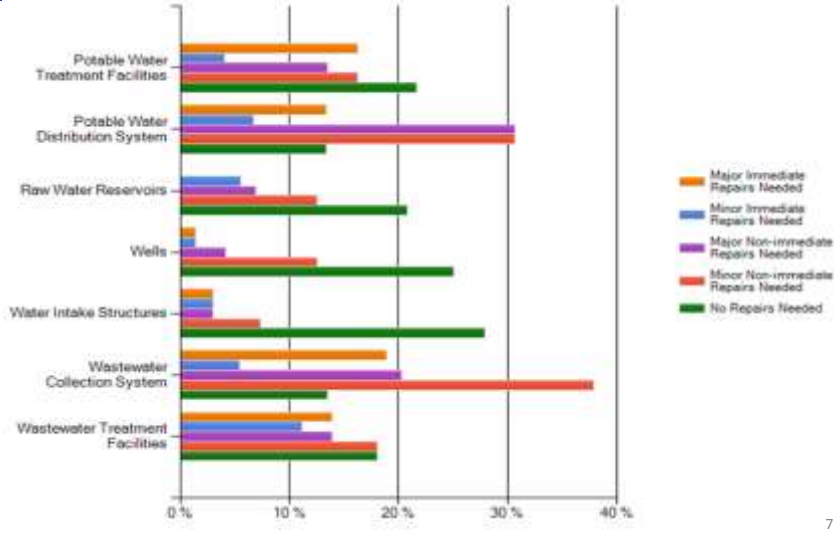
Municipal Concern About The Long-term Financial Stability Water and Wastewater Infrastructure (Municipalities with Populations under 2,500)



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Current Condition of Municipal Water & Wastewater Systems

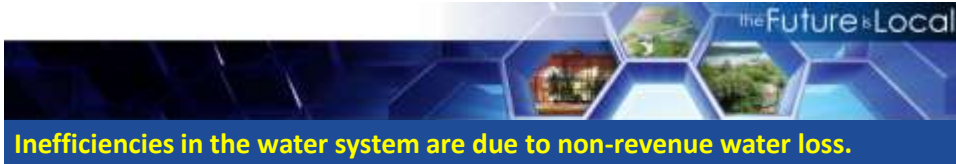


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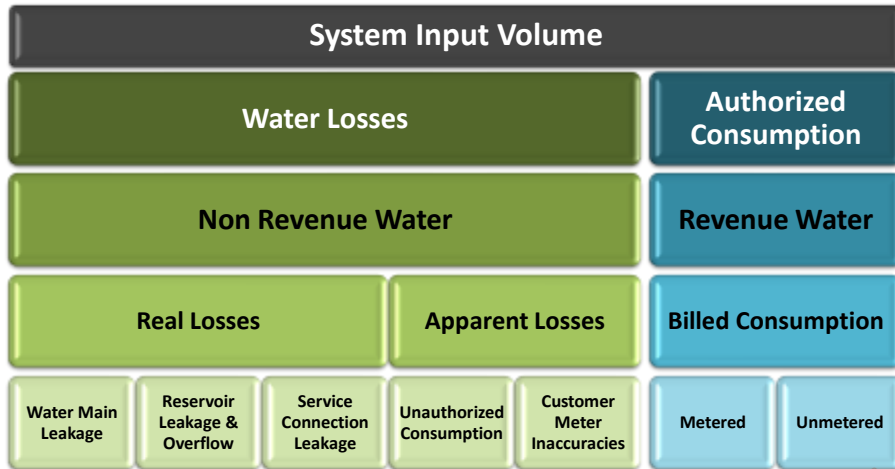
Understanding Municipal Water Loss

Understanding Municipal Water Loss





➤ Non-Revenue Water = difference between volume of water produced & volume sold.



AMSC Water Initiative Introduction

Water Loss Control



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AMSC Water Initiative

WATER LOSS CONTROL

- Efforts of drinking water utilities to provide accountability in their operations by reliably auditing their supplies and implementing controls to keep system losses to reasonable minimal levels (American Water Works Association, 2011).

Three Steps to Water Loss Control:

1. Water audit;
2. Pinpoint losses with a more comprehensive audit;
3. Implement loss control measures (such as fixing leaks).



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Key Deliverables

- Create a business case on providing water audits and other aspects of a comprehensive water loss control strategy;
- Create and complete a pilot AMSC Water Audit;
- Create and maintain a database on Alberta water and wastewater systems; and
- Create templates for AMSC water audits and water loss control for Alberta water and wastewater systems.



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Solutions

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AMSC Water Audit Initiative

- Water Audits:
 - Systematically evaluates the entire system (treatment to billing); and
 - Identify methods to address system inefficiencies or sub-par performance through the development and implementation of a Leak Detection Program;
- The Water Audit Pilot can be used to identify potentials in:
 - Providing system maintenance and/or repair services;
 - Expanding water metering and monitoring capabilities;
 - Providing software for data management and billing;
 - Mapping water systems; and
 - Developing strategic partnerships for water service capabilities.

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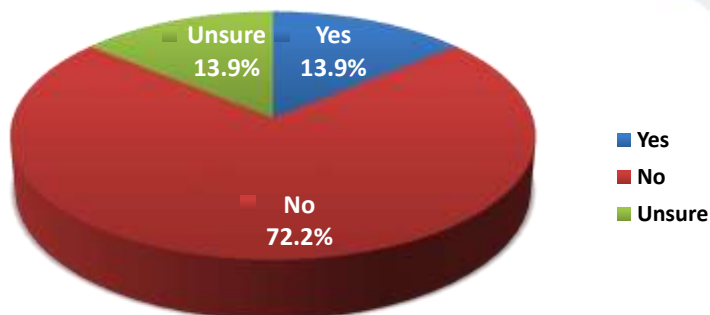
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Water Audit Purpose & Benefits

- For municipalities the availability of a water audit service could potentially:
 - Reduce the need for in-house technical expertise;
 - Provide accurate water audits;
 - Outline recommendations to mitigate areas of concern;
 - Minimize system risks and downtime;
 - Reduce operating and maintenance costs; and
 - Increase revenue by reducing water losses and system failures.

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Percent of Municipalities that Conduct Annual Water Audits to Assess Leakages (Populations Under 2,500)




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Water Audits & Advocacy

- AMSC Water Audits will align with AUMA advocacy efforts on the Water Conservation, Efficiency and Productivity Planning Initiative which:
 - Requires municipalities to complete a water audit and report the results to the AUMA; and
 - Increases the Water Audit Target Reporting Rate by reducing barriers (time, capacity, software, etc.).



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Water Distribution System Repairs & Maintenance

- Water distribution system repairs and maintenance was identified as potential service component because:
 - A high percentage of systems will need maintenance and repair over the next decade;
 - Leak management saves large quantities of water, energy, and money; and
 - 20% of Alberta municipalities will require system retrofits due to increased demand.



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Water Distribution System Repairs & Maintenance

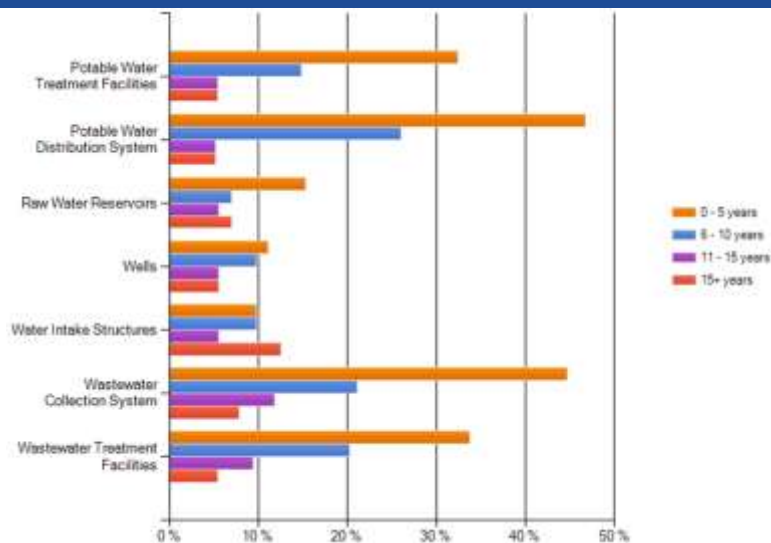
- Benefits to municipalities of maintaining and effectively repairing their potable water distribution systems are:
 - Reduced water losses resulting in increased revenue;
 - Reduced water production minimizing the need to develop additional supply and delaying costly capital expansions;
 - Increased knowledge of their distribution system; and
 - Reduction of property damage due to pipe failures and undetected leakages.



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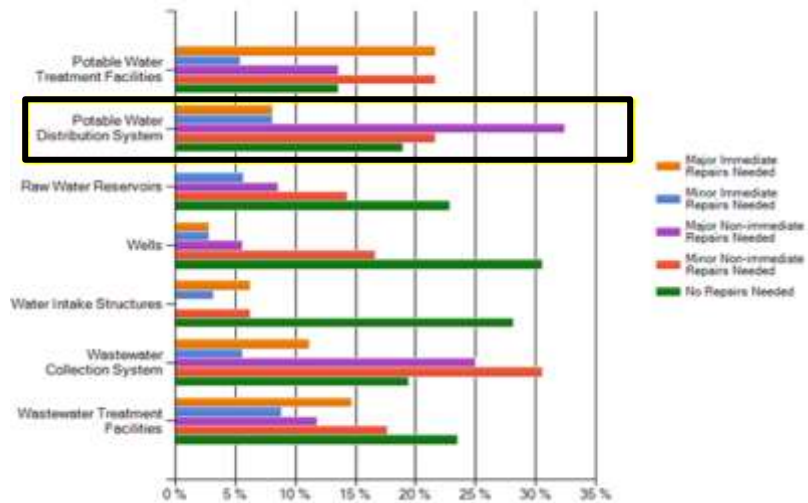
Years Until Municipalities Believe Major Maintenance Upgrades will be Necessary



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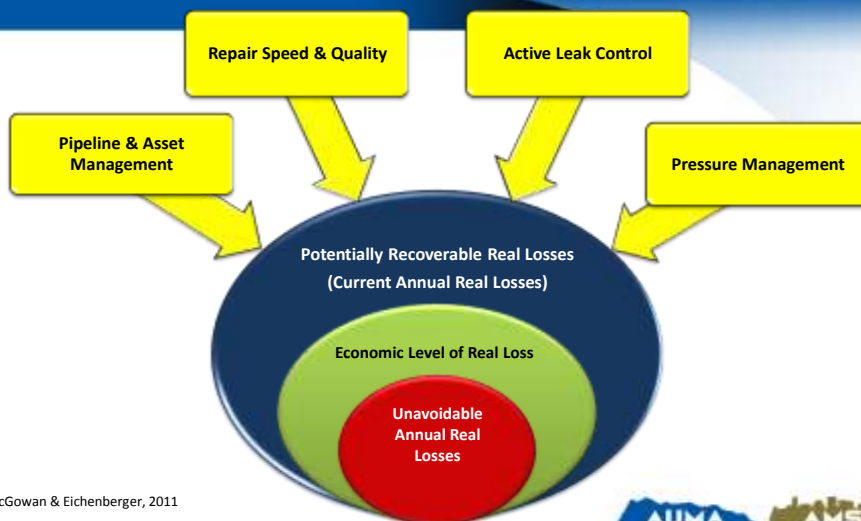
Current Condition of Municipal Water and Wastewater Systems (Populations Under 2,500)



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Leakage Management



McGowan & Eichenberger, 2011



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Municipal Case Study

Municipal Perspective on Water Loss Control



Meter & Information Management


- If a water system is not metered it is difficult to calculate water loss and complete a water audit.
- Water data management requires consistent data collection, processing and translation into billing information.
- The benefit of metering and information management for municipalities include:
 - Water revenue enhancement;
 - Comprehensive understanding of the water system;
 - Timely, accurate readings and billing information; and
 - Streamline utility administration.






Cost & Pay-back Periods

- In order for the Initiative to be successful they need to be financially viable.
- Understanding costs and benefits of the Water Initiative is crucial for overall success and effective decision making.
- In a study conducted by *Watergy*, an improved pumping system, leak management, and regular monitoring (with rigorous metering) were identified as the most economical areas for upgrades.
 - For projects in these areas, payback periods were often less than two years and very seldom exceed three years.



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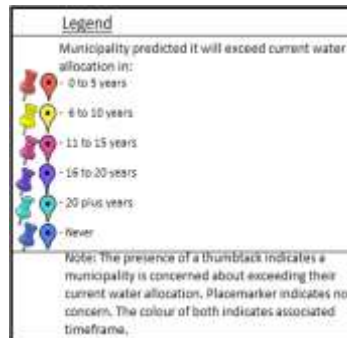


Measures & Payback Periods of Improve Efficiency

AREA	FUNCTION	PAYBACK (YEARS)
Electric Installations	• Power Factor Optimization with Capacitors	0.8 – 1.5
Operations & Maintenance	• Routine Pump Maintenance	2
	• Deep Well Maintenance and Rehabilitation	1 – 2
Production & Distribution	• Automation to Control Pressure and Output and Optimize Pumping Equipment Operation	0 - 5
	• New Efficient Pump	1 – 2
	• New Efficient Motor	2 – 3
	• Optimize the Distribution Network	0.5 – 3
End Use	• Use of Efficient Technology Incentive Program	1 – 3
	• Effective Metering of Consumption	1 - 2



Target Market: Alberta



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Target Market: Southern Alberta



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PROPOSED NEXT STEPS

- Create and maintain an AMSC Water Systems Database.
- Complete an AMSC Water Audit pilot to:
 - Illustrate cost and payback period of a water audit;
 - Develop a water audit process and report templates; and
 - Provide a comprehensive AMSC business service completing water audits.

CURRENT ACTIONS

- Business case development is underway for water audits and associated services for an Alberta-based solution.
- Ideally, the Water Initiative pilots will begin early next year.



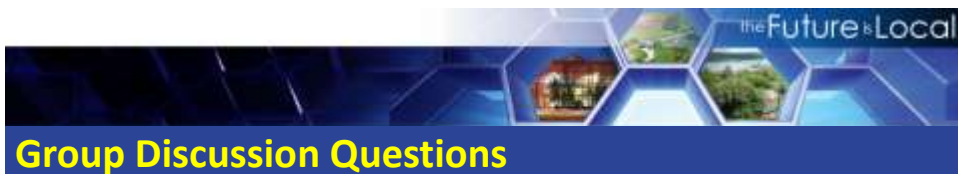
AMSC's Water Initiative exploration is aimed to strengthen the infrastructure for safe drinking water for **ALL** Alberta Municipalities.

THANK YOU!





QUESTIONS?



Group Discussion Questions

1. Do you agree with Water Audits as the first opportunity AMSC should explore in its Water Initiative business plan? If you disagree, what should AMSC target first?
2. What challenges has your municipality experienced related to water audits?
3. What challenges has your municipality experienced related to water audits?
4. What top 3 business services should AMSC potentially offer to assist municipal water & wastewater systems?
5. What other potential solutions should AMSC consider to improve municipal water & wastewater systems?

