WATER CONSERVATION AND EFFICIENCY STRATEGY

Presenter

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Introduction

In October 2009 the City of Kawartha Lakes commenced development of a Water Conservation and Efficiency Strategy where significant investigation and analysis of the 21 water systems infrastructure, historical billing data, demand forecasts, population projections and housing trends was completed.

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Introduction

A significant water saving opportunity exists within the municipal water distribution system.

The research and technical analysis completed as part of the Water Conservation and Efficiency Strategy has identified 10 potential Water Efficiency Measures

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Water Efficiency Measures

1. Single Family Detached Residential Indoor Measures

- Provide rebates to residents who:
  - Replace inefficient 13L toilets with high efficiency toilets
  - Install water efficient clothes washers and water efficient furnace mounted humidifiers

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Water Efficiency Measures

2. Single Family Detached Residential Summer Demand Measures

- Educate residents on how to convert their properties to water efficient landscapes.
- Provide rebates or subsidized pricing for rain barrel or larger water storage unit.

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Water Efficiency Measures

3. Multi Family Residential Indoor Measures

- Provide rebates to building owners who:
  - Install high efficiency toilets
  - Install a water efficient clothes washers in their laundry rooms.

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Water Efficiency Measures

4. Residential New Development Indoor Measures

- Development of a builder program to promote a higher level of water efficiency in all new construction above what is required by the OBC.
- Provide rebates to builders who purchase and install high efficiency toilets, low flow showerheads and kitchen faucets and water efficient clothes washers in new construction.

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Water Efficiency Measures

5. Residential New Development Summer Demand Measures

- Provide rebates to builders who install water efficient landscapes as part of new home construction.

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Water Efficiency Measures

6. Industrial/Commercial/Institutional Measures

- Provide rebates to facilities who replace inefficient 13L toilets with high efficiency toilets.
- Complete comprehensive water audits over a three year period and offer a capacity buy-back rebate to any facility that implements all or some of the water savings.

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Water Efficiency Measures

7. Municipal Measures

- Reduce municipal distribution leakage by designing and implementing District Meter Areas (DMA) in all 21 distribution systems.
- Locate, quantify and repair leakage within the water distribution system.

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Water Efficiency Measures

8. Public Education

- Distribution of booklets, leaflets, and fact sheets at home shows and community and environmental events.
- Provide workshops and seminars to the public on water saving techniques both inside and outside the home.

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Water Efficiency Measures

9. Youth Education

- Develop and deliver a water efficiency education program based on the Ontario curriculum requirements.
- Continued participation in the Haliburton – Muskoka – Kawartha Lakes Children's Water Festival and other related festivals.

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Water Efficiency Measures

10. Policy Based Recommendations

- Continue to implement Phase 1 water restrictions during Peak Seasonal Demands.
- That staff undertake the development of an enhanced public education water conservation program.
- That staff initiate water loss mitigation activities.
- That staff pursue external funding sources, and key partnerships.

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Water Efficiency Measures

Rain Water Harvesting and Grey Water Reuse

- Much discussion over the past few years.
- A few municipalities are undertaking or have completed demonstration projects or pilots to evaluate savings and costs.
- These technologies are not currently cost effective based on current water rates.

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Water Efficiency Measures

Rain Water Harvesting and Grey Water Reuse

- Recommendations
  - Pursue some of the other cost-effective measures in order to achieve water savings.
  - Consider rain water harvesting and grey water reuse for future programming when other options are exhausted.
  - Continue to track the progress of these technologies and re-evaluate periodically.

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Water Efficiency Budget
- Total Potential Water Savings

The analysis determined that the total potential for water efficiency is 1,823,703 m3/year of water savings. However, meeting this total water efficiency potential assumes 100% participation rate in all water efficiency measures.

The potential water savings analysis also assumes an overall decrease in residential single family demand from the current 224 Lcpd to 153 Lcpd.

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Water Efficiency Budget
- Total Achievable Water Savings

A ten year strategy indicates an achievable water savings of 942,882 m3 per year by 2021. Not included in this estimate is the additional savings attributed to public and youth education. All would agree that education contributes to water conservation and efficiency but as discussed in the report, the exact savings are not possible to estimate or quantify.

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Water Efficiency Budget
- Water Efficiency Savings

Comparison of Achievable Water Savings to Potential Water Savings

Sector	2009 Billed Metered Demand m3/year	Potential Water Savings m3/year	% Savings	Achievable Water Savings m3/year	% Savings
Residential	2,012,598	637,638	32%	368,176	18%
ICI	791,699	317,700	40%	104,589	13%
Total	2,804,297	955,338	34%	472,765	17%

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Water Efficiency Budget

Based on the potential water efficiency measures, a budget was developed assuming full implementation over a ten year period.

The budget includes all costs including rebates, administration and management fees based on an estimated number of participants over the ten year period.

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Water Efficiency Budget

- Ten Year Capital Budget $5,597,599
- Ten Year Maintenance Budget $1,367,939
- Ten Year Monitoring & Evaluation Budget $775,820

It should be noted that the City can choose to implement any of the water efficiency measures as stand-alone projects. The City does not have to adopt all measures presented.

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Water Efficiency Budget

The reduction of water-use through an efficiency program and the associated energy savings will provide energy savings and greenhouse gas emission reduction.

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Water Efficiency Budget

*Based on 2009 electricity rates

	Water Savings per Year (m3/year)	Energy Savings per Year	CO2 Reductions per Year (tonnes/yr)
Overall Water Savings	942,882	706,840 KWh Electricity	203 tonnes
Pre-Rinse Spray Valves	Included in above	35,514 m3 Natural Gas	73 tonnes
Overall CO2 Reductions			276 tonnes

Electric savings of 706,840 KWh for the City of Kawartha Lakes represents a savings of $42,400 on its electric bill per year

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Benefits of Water Efficiency

Water Efficiency is recognised as a utility Best Management Practice (BMP) by the Federation of Canadian Municipalities (FCM), National Research Council (NRC) and the American Water Works Association (AWWA).

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Benefits of water efficiency

Water efficiency is an alternative in generating additional water and wastewater capacity, sometimes as low as 25% of the cost of new infrastructure. It can defer and sometimes eliminate new infrastructure projects.

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Benefits of water efficiency

The well sites, treatment plants, pumping stations and distribution system consume significant amounts of energy therefore, water efficiency reduces that energy consumption and thus reduces greenhouse gas emissions

Water efficiency can contribute to lower water and energy bills for residents and businesses.

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Benefits of water efficiency

Water efficiency, including water loss mitigation, is a requirement to the recently amended Permit To Take Water Program administered by the Ontario Ministry of the Environment

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Questions
and
Thank you

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