Q&A

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- ☐ THE CANADIAN WATER AND WASTEWATER ASSOCIATION
- ☐ THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT
- ☐ THE CANADIAN WATER RESOURCES ASSOCIATION
- ☐ THE FEDERATION OF CANADIAN MUNICIPALITIES

Q WHAT DOES THE CITY OF SCARBOROUGH, ONTARIO (POP 524,600) HAVE IN COMMON WITH THE TOWN OF COCHRANE, ALBERTA (POP 5,265)?

A BOTH ARE MANAGING THEIR WATER SUPPLY TO MAXIMIZE THE RETURN ON THEIR INFRASTRUCTURE INVESTMENTS

Q HOW HAS CAP-DE-LA-MADELEINE, QUEBEC (POP 33,716) PROTECTED ITS HIGH-QUALITY GROUND WATER SOURCE (AQUIFER) FOR THE FUTURE?

A BY IMPLEMENTING WATER-EFFICIENCY MEASURES TO ENSURE THAT THE AQUIFER WILL NOT BE DRAWN DOWN FASTER THAN IT CAN NATURALLY RECHARGE

Q HOW DID VERNON, BRITISH COLUMBIA (POP 23,514) MANAGE TO REDUCE HOUSEHOLD WATER CONSUMPTION BY 28%?

A BY INSTALLING WATER METERS AND CHANGING TO A CONSUMPTION-BASED RATE STRUCTURE

This guide will show you how to bring the benefits of water efficiency to your community!

Take up the challenge!

ACT NOW TO ENCOURAGE WATER EFFICIENCY

"I think it would be a good idea to have more metres in use, as it is the only way to make the consumer interested in the amount of water he is using, and the only way to stop the waste of water. The old flat [rate] system is behind the times and it encourages the waste of water."

GEORGE EDNEY, 1916

George Edney's idea was innovative in 1916. The problems associated with wasting our water resources, and the implications of uncontrolled consumption and low prices were recognized eighty years ago. It's shocking that some Canadian municipalities have yet to take measures to encourage water efficiency. We can all learn from history and from the experience of municipalities across Canada who have faced water problems and taken the necessary actions to protect their water systems for the future. There are many benefits associated with water-efficiency programs:

- ☐ Reducing water demand may help communities defer the need to expand the municipal water supply or wastewater treatment capacity.
- ☐ Reducing system leakage within the existing supply will allow your community to grow without having to expand water or wastewater services.
- ☐ Local businesses can reduce operating costs — improving their competitiveness while contributing to the municipality's efforts to reduce the overall demand for water and wastewater services.
- ☐ Fair rate structures help your municipality recover the costs of delivering water services while ensuring that funds are available to undertake necessary repairs and upgrades — reducing the need to borrow money and ensuring that continuous, uncompromised and uninterrupted water services are available to the community.

- ☐ With reduced demand for water, a utility can also reduce some of its other operating costs For example, the chemical and energy costs associated with the treatment and pumping of water and wastewater would be reduced
- ☐ Public awareness programs create an appreciation for the value and importance of community water services and convince residents to support water efficiency programs and practices
- ☐ Using water more efficiently preserves the quality of our natural environment

With all these benefits, why hasn't every municipality implemented a water-efficiency program? A large part of the answer is that most Canadians have come to take water for granted We expect clean, safe, drinkable water to come out of the tap every time it is turned on But we overlook the costs of getting the water into drinkable condition and sending it to the tap, then restoring it to a condition suitable for release back into the environment after it has been used If consumers don't pay these costs, they won't think about them As a result, water issues are not high on the list of people's concerns until there is a crisis

People depend on their municipal leaders to make wise choices in shaping the future of their community They expect their local government to be informed and involved in issues of long-term consequence to the community, and to take the necessary steps in the best interest of its residents By taking action on water efficiency, you will reflect the universal concerns of your constituents for a secure water supply, a healthy environment, and sound fiscal management Water management is key to the future of your municipality The time to show leadership is now

The Challenges

Water issues are becoming critical in all regions of our country Canada enjoys a relative abundance of freshwater, but the supply is not endless Every water-use restriction and contamination problem indicates that our freshwater resource is under stress and there is a need to put water-efficiency plans into action Current water-management practices in Canada are not generating sufficient funds to meet the growing needs for infrastructure maintenance, improvement and expansion **What are the issues in your water supply system?**

Some municipalities will face a financial crisis before the end of the decade if steps are not taken to avoid it Waiting until there is a crisis should never be an option when managing our most vital natural resource, especially when it guarantees public health **Do you know your situation?**

There is a critical need to spend $10 billion on the maintenance of existing water infrastructure in Canada over the next five years **How much will your community need to spend? Where will the money come from?**

Will your community need to develop additional water supply, increase wastewater treatment capacity, or both, in order to keep up with the growing demand for water? **Where will the money come from?**

Most communities will soon have to improve their water and wastewater treatment processes to meet new drinking water guidelines or environmental standards **What will your community have to do to comply? Where will the money come from?**

The realities of increasing costs, stricter water treatment and wastewater regulations, water shortages, increasing

demand for water, and reduced government assistance to expand and repair municipal infrastructure are issues that have to be faced It's up to Canada's municipal leaders to provide leadership and lay the groundwork for efficient solutions to these problems **Are you prepared to provide leadership?**

There are many opportunities for municipalities to improve and protect water services at a cost that community residents can afford The costs of not managing the community's water resources are astronomical in comparison, and will have to be borne by rate payers in the future if action is not taken now to avert the crisis **Have you discussed this with your water managers?**

The water-management decisions made today will have a major impact on your community's future The benefits of water efficiency are real, and with careful planning your municipality can address the pressing water and wastewater issues **How does water management fit into your long-term planning processes?**

The Opportunities

There are affordable solutions to the short- and long-term water problems facing Canadian municipalities

At the most basic level, there are two ways to meet a community's need for water looking for ways to expand sources and infrastructure, or managing the demand by taking steps to operate efficiently and reduce water consumption Reducing demand now could provide some municipalities with the extra time and financial ability to gradually phase-in infrastructure improvements or enhancements Demand management approaches are more cost effective and more environmentally responsible than increasing community supply capacities

Water-efficiency programs focus on four areas

- ☐ **Protecting the water supply** - Preserve water quantity and quality by taking out no more than necessary (and no more than the recharge rate in the case of groundwater) and returning water in the condition that you would want to receive it
- ☐ **Improving operating efficiencies** - Detect and repair leaks in the distribution system, and reduce operational costs
- ☐ **Encouraging efficient and responsible water use** - Save money now by using less water, and save even more money by deferring or avoiding infrastructure expansion or replacement Reduce demand through practical measures such as promoting water-saving fixtures, imposing summer lawn-watering restrictions, installing meters, and implementing consumption-based rate structures
- ☐ **Developing public awareness** - Increase the effectiveness of all your water-efficiency measures by making people aware of the water issues facing the community, and enlisting their support and involvement

Protect current water supply sources.

The following section outlines how municipalities can put ideas into practice and develop their own water-efficiency plan. Municipal experiences demonstrate that water efficiency can, and does, work.

It may be possible to defer or even eliminate the need to develop new sources of water by taking measures to protect the source of the current water supply

Cap-de-la-Madeleine, Quebec (pop 33,716) faced a looming water supply crisis when the ground water level dropped 1 88 metres over an eight-year period The city decided to protect its high-quality water source by controlling demand Their comprehensive demand-management program included installing meters on all industrial commercial and institutional properties, strict summer water-use regulations, prohibition of specific water-wasting devices and practices, and a self-financing inspection program As a result, water consumption dropped and the rate of draw down on the aquifer has returned to its natural recharge rate. The water source is protected for the future and investments in additional wells and pumping equipment have been avoided

The City of Vancouver's (pop 471,800) water supply comes from a reservoir replenished by rainfall and mountain runoff But now, drought and a growing population have begun to affect reservoir levels, leading the city to impose summer water rationing As developing new supplies is not an option, Vancouver focuses on water efficiency as a means to protect the existing supply Water-use restrictions and schedules are implemented during the summer, and the city is passing a by-law to encourage the use of water-efficient plumbing fixtures.

Reduce leakage from water distribution systems.

Some estimates put average system leakage as high as 30% The target for system leakage should be 0% Detecting and reducing losses within existing distribution systems can generate revenues from water that has already been treated but is being lost through leaky pipes Preventing the loss of water will also help to prevent shortages and defer the need to develop new supply sources

The City of Scarborough, Ontario (pop 524,600) located leakage in their water distribution system amounting to 353.3 gallons per minute That level of leakage translated into a revenue loss of $422,000 dollars a year Over a two-year period, the leak detection program earned a net recovery of $595,000 in water revenue

A leak detection and correction program in Sillery, Quebec (pop. 12,519) uncovered daily losses of 3 8 million litres of treated potable water — 35% of their treatment plant's total production

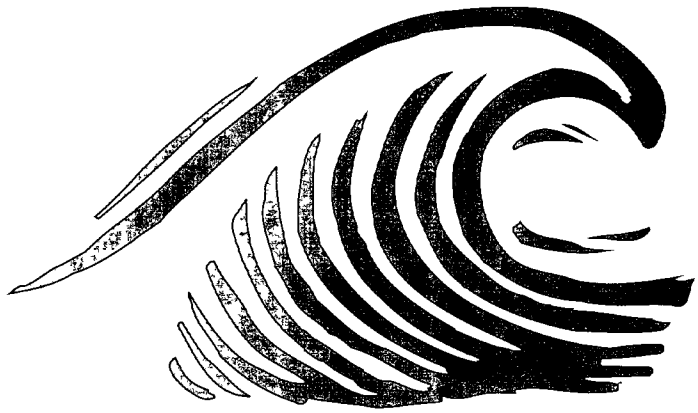
Municipalities can self finance leak reduction programs, hire a consultant or contractor and pay them from the savings or negotiate third party financing

Prevent unpolluted water from entering sanitary sewers.

Water can enter sanitary sewers from roof downspouts, sump pump connections, foundation drains, unsealed sewer covers and cracked pipes This water is not polluted and does not need treatment During rainstorms many systems get so overloaded that untreated wastewater has to be discharged into nearby streams The results can include fish kills, polluted beaches, and smelly and unsightly streams and ponds

This problem can be addressed by passing by-laws and implementing inspection programs to disconnect downspouts, sump pumps and foundation drains from sanitary sewers, diverting the flow to lawns, storm sewers or road ditches Sewer covers can be sealed and there are low-cost ways to repair cracked pipes and joints without having to dig them up and destroy roadways

Reduce daily demand by promoting water-efficient fixtures and add ons.



Widespread use of water-efficient fixtures will reduce the daily demand for water and reduce the amount of wastewater needing treatment Replacing older fixtures with new low water-use toilets, showerheads and faucet aerators can save between 30 and 50 litres per day per person Similar programs in hotels, schools, hospitals, etc can result in considerable water savings

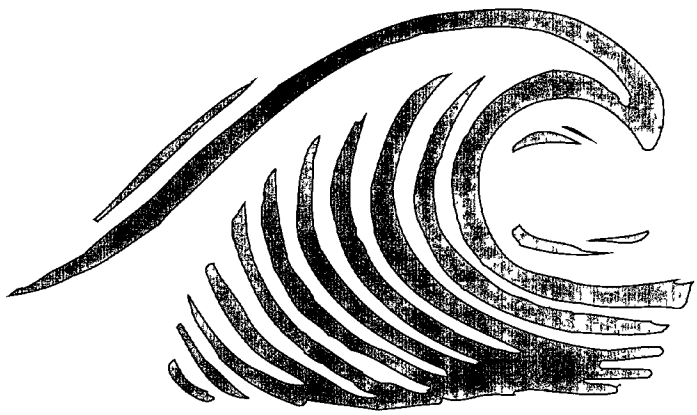
Municipalities have several options distributing devices free of charge, offering the items directly at a subsidized price, partnering with local retailers to offer the items at a special price, or simply endorsing water-efficient products through public communications efforts Municipalities may also pass by-laws requiring that water-efficient fixtures and fittings be used in new construction

The Town of Cochrane, Alberta (pop 5,265) provided free toilet dams, low-flow showerheads and low-flow swivel kitchen sink aerators to every household in town They also legislated the use of water-saving fixtures as a condition of issuing building permits. Community participation exceeds 95% and has resulted in at least a 15% decrease in water use, enabling the town to defer a $4 million capital infrastructure expenditure for three to five years

Reducing the amount of water used by toilets is especially important as toilets account for about 40% of all the water used in a typical home Toilets that use only six litres per flush are now widely available (compare this to the average 20 litres used by toilets installed before 1980!) Effective January 1, 1996, six litre per flush toilets must be installed in all new construction in Ontario

The City of Barrie, Ontario (pop 71,413) has embarked on a program to replace toilets in 15,000 households over the next three years in an effort to postpone an expensive addition to its wastewater treatment plant and to defer building a new water plant Homeowners are offered free fixtures and pay only for installation.

Reduce summer water consumption and demand peaks.



Lawn and garden watering during the summer months, on top of the normal daily demand for water, puts an additional demand stress on water supply systems, forcing utility managers to build extra capacity which is not used most of the year Encouraging water efficiency can significantly reduce summer peaks and help smooth out a community's water demand profile

A successful method of managing summer peaks has been encouraging residents to follow lawn and garden watering schedules This will also encourage people to adopt more water-efficient summer habits and lawn and garden practices Another effective method is "xeriscaping" — creating low-water, low-maintenance landscapes Xeriscaping can be promoted through partnering initiatives with local garden centres and yard-care companies Other measures that may be appropriate in some areas include encouraging the use of rain barrels, sand points and private irrigation systems using nearby streams or rivers

The Town of Port Elgin, Ontario (pop 6,857) avoided a $5.5 million expansion of its water treatment plant With the help of an intensive water conservation program that included promotion of low-water-use fixtures and summer watering schedules, summer water use was cut in half and water use for all of 1993 dropped 25% This saved the town $12,000, just on energy and chemical costs for water and sewage treatment.

Since 1988, the City of Regina, Saskatchewan (pop 179,200) has been promoting a voluntary community watering schedule and encouraging watering before 11 a.m and after 5 p m The watering demand has been smoothed out over seven days and receives great community support. The city also promotes xeriscaping as an alternative to thirsty lawns Over 1,200 people attended the city's xeriscaping seminars in 1994

Encourage responsible water use through cost recovery.

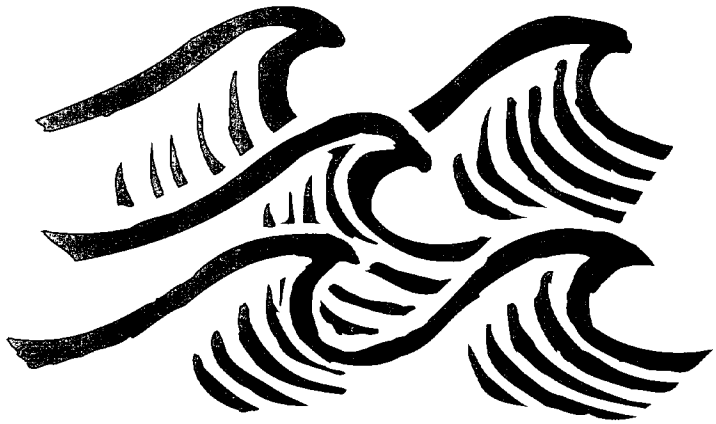
Some water rates encourage water efficiency, some don't The best rates are based on consumption and recover the full cost of operating the water and wastewater system User-pay rate structures create a highly effective incentive to use water efficiently Coupled with a public education program, full cost pricing can be successfully implemented in any community

Full cost pricing requires removing water and wastewater costs from the municipal tax base A 1985 survey by the Federation of Canadian Municipalities indicated that approximately 30% of water system revenues come from the municipal tax base When taxpayers subsidize community water use and wastewater treatment, the real costs are not obvious and there is no incentive to use water efficiently

Bedford, Nova Scotia (pop 11,618) implemented a user-pay water and wastewater rate structure Property taxes decreased when water costs were removed Now, consumers receive a separate water bill and pay a fair price based on the amount of water they use.

Moving to full cost pricing will actually help municipalities save money, control costs and manage the increasing demand for water and wastewater services

Town residents of Rosetown, Saskatchewan (pop 2,500) found the quality of their water unacceptable due to high sulphate and mineral levels In 1993, the town built a $2 6-million treatment plant to remedy this situation Water rates increased, with the average bill going from $18 to $48 per month The new rate ensures adequate project financing and provides a reserve fund for maintenance Community residents are generally happy to pay a fair price for the improved water quality



Install metres to reduce water consumption.

Only 50% of municipal water customers were metered in 1990, even though the benefits of metering are well known customers have an economic incentive to use water efficiently, operating costs are reduced, some infrastructure investments may be delayed, and unaccounted for water can be estimated more accurately

Metering has proven to reduce residential water consumption in small towns and big cities alike For example, unmetered residences in Calgary use a staggering 46% more water than metered residences Metering is the only fair way to measure use and recover the costs of providing the service while providing a greater incentive for water efficiency

The City of Vernon, British Columbia (pop 23,514) installed water metres in 1992 and went to a consumption-based water rate structure Since then, per household water consumption has decreased by 28%.

Encourage water efficiency in the commercial/ industrial/ institutional sector.

It is important to understand the needs of large water consumers and to assist them in reducing their water use Some municipalities have developed guidebooks and conduct workshops to train company staff to carry out water audits and develop plans to improve water efficiency Many large water users have found that a small investment in water efficiency can significantly reduce their water costs Many of the measures have the added bonus of reducing energy use and reducing pollution The end result is a reduction in water use and more competitive industry, which may help preserve local jobs

The City of Edmonton, Alberta (pop 616,700) has developed a water handbook for building supervisors and property managers that goes through the steps of conducting a building water audit An audit of one Edmonton office tower identified a potential 36% reduction in water use — representing an annual savings of $65,000 for the property management company The city benefitted by reducing the demand for water, and the company benefitted by reducing its operating expenses and becoming more competitive.

Lead by example.

Implementing water efficiency should start at home Municipalities should look at their water-use practices in publicly owned facilities and open spaces, and make necessary changes such as installing water-efficient toilets, low-flow showerheads and low-flow faucet aerators in public buildings, and adapting efficient outdoor watering practices for open space management Demonstrate your municipality's commitment to water efficiency by announcing the new practices and procedures, and including information on the expected benefits to the public

The City of Toronto, Ontario (pop 635,400) is currently retrofitting a large number of city-owned facilities with water-efficient fixtures The Province of Ontario has established guidelines for equipping all new buildings and renovations with water-efficient fixtures

Build community awareness.

A public education campaign, carried out in concert with other water-efficiency measures, can help build awareness of the costs of bringing safe, clean water to our taps, and foster a better appreciation of its true value and importance to the community A fully developed communications plan may include a series of bill stuffers promoting water efficiency, special events and displays, and working with the local media to get your messages out

It is important to involve the community in meeting the water and wastewater challenges facing your municipality If the water consumers have a hand in defining the problems and identifying the solutions, it is more likely that the municipality will be able to generate broad community co-operation and support for the water-efficiency measures that need to be implemented — even if this involves increasing water rates

Some municipalities might want to establish a public advisory committee on water issues There are also opportunities to involve your schools in public awareness programs Long-term water-efficiency goals will only be achieved if values and attitudes can be influenced so that people understand the need to make behaviour changes

Regina, Saskatchewan (pop 179,200) has managed to defer a $50 million expansion of their sewage treatment plant, originally scheduled for the early 1990s, to the year 2003 Regina's experience indicates that price, combined with an effective public awareness program, are key factors in reducing consumption

The Future

Taking action on water efficiency is a WIN-WIN situation It is an opportunity for municipal leaders to show leadership and initiative in three areas of major interest to constituents responsible fiscal management, stewardship of the environment, and concern for the community's future The value of sound planning and effective municipal decision making will shine through in the high quality of life your community is able to sustain for years to come

Taking action now can provide an opportunity for the community to come together in support of protecting the water supply for future generations By consulting with the community and addressing any concerns that may be raised, an atmosphere can be fostered where everyone is part of the solution and everyone benefits from the changes

There is also opportunity on an individual level to take pride in participating in a worthwhile effort It really is quite easy to use water wisely People can feel good about reducing their water consumption in the same way that they feel good about participating in recycling programs it's something that they can easily do that makes a difference

Perhaps most importantly, taking action on water efficiency provides an opportunity for our environment to flourish Remember that water is something we borrow from the environment Ultimately, the water we use goes back to the environment, and only our careful stewardship of the resource will ensure a safe supply for future generations

This publication is brought to you in partnership by:

- The Canadian Water and Wastewater Association
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- The Canadian Water Resources Association
- The Federation of Canadian Municipalities

To obtain a copy of the National Action Plan to Encourage Municipal Water Use Efficiency, please contact:

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The following materials are available from the Canadian Water and Wastewater Association:

Publications

- Meters Made Easy
- Municipal Water and Wastewater Rate Manual

Information

- Meter selection and sizing
- Meter reading technologies
- Bill stuffers