

**AN OVERVIEW OF  
FEDERAL, PROVINCIAL  
AND TERRITORIAL  
WATER CONSERVATION POLICIES**

**CCME**

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## **EXECUTIVE SUMMARY**

An introduction provides a brief overview of the increasing demand for water as a resource in Canada, as well as the increasing costs associated with that demand. Conservation or demand-side management, frequently used in the energy sector, is one method to reduce costs associated with water supply and treatment, and will result in a more sustainable use of water in Canada. Many governments are moving to a more efficient use of water as a means to reduce costs for supplying the resource. In order to exchange information on provincial, territorial and federal government water conservation initiatives, a survey of existing and proposed policies and policy instruments was conducted and is reported on here. All jurisdictions completed the survey.

The survey results, partially summarized here, indicate an increasing trend to water conservation and that a variety of policy instruments are being used to accomplish this.

The first section of the survey addresses policy. Four of the 13 jurisdictions have legislation which specifically addresses water conservation. They are the Northwest Territories, Alberta, Saskatchewan, and Ontario. Of the four jurisdictions that have legislation, two have regulations that support the water conservation aspect of the legislation.

Four jurisdictions are planning new legislation on water conservation, two of which already have some legislation. This will result in two additional jurisdictions having legislation, Yukon and British Columbia. Most new legislation will address pricing and education programs to encourage reduction of water use.

Policies do not necessarily require legislation. Seven of nine respondents indicated that they had water conservation policies without legislation. They are the federal government, Northwest Territories, Yukon, Alberta, Saskatchewan, Ontario and New Brunswick.

One indication of the strength of a policy is establishment of priority areas and/or use reduction targets. Four jurisdictions have identified priority areas: the federal government, Northwest Territories, British Columbia and Ontario. Alberta and Ontario have established targets.

Other legislation concerning water can complement or conflict with water conservation policies. Two key areas in this respect were addressed in the survey: water rights allocation and water quality regulations. Of the jurisdictions that have water rights allocation legislation, two stated their allocation mechanism encouraged conservation, six said it did not. Four jurisdictions stated that their water quality regulations encouraged conservation, eight said they did not.

The second section of the survey looked at policy instruments. Eleven of the thirteen jurisdictions have some type of policy instrument that encourages water conservation.

Trends in water conservation policy can be seen in the use of policy instruments. One trend is to work with the large water users, municipalities and industry, as well as agriculture where it is a significant user. There is also some indication that concern about availability of supply is a greater motive for conservation than costs for providing that supply.

The most frequently used policy instrument was a program or strategy to encourage conservation within industry. The next most frequently used policy instruments were: coordinating bodies, programs with municipalities, and education programs. Only five provincial jurisdictions are planning to use, or do use, a pricing formula to encourage conservation.

The policy instruments used the least were: procurement policies within government, strategies or programs on Crown lands, and design standards or building/plumbing codes. Programs for water conservation in government buildings were the next least likely used policy instrument.

Ontario has existing or proposed programs/strategies in each of the policy instrument areas covered by the survey.

Details of the responses and descriptions of programs and strategies, where given, follow the overviews of sections 1 and 2 of the survey results.

In conclusion, the report recognizes that the use of policies and policy instruments for water conservation is increasing. Governments are moving more to demand-side management as a means to reduce costs of supplying water, and to conserve the resource where quantity of the supply is a concern. There is some indication that the concern about availability of supply is a greater motive for conservation than the cost for providing that supply. The trend in choice of policy instruments is to establish programs or strategies with the large users. Over half of the jurisdictions have a coordinating body to orchestrate water conservation. Less than half of the jurisdictions use water pricing formulas to encourage conservation. Few jurisdictions are utilizing water conservation strategies in procurement guidelines, government buildings, Crown lands, or standards and codes. Over half of the jurisdictions make use of education programs to encourage efficient water use. The fact that a variety of joint projects and other initiatives have been undertaken by governments across Canada indicates their recognition of the benefits of water conservation.

## 1.0 BACKGROUND

The State of Canada's Environment report (1991) outlines the increasing demand for water as a resource. Water withdrawal for municipal use increased 49% from 1972 to 1986. To sustain a reasonable quality of life a person requires 80 litres of water daily, but Canadians consume an average of 360 litres per person per day. Water withdrawal for thermal power generation has increased by 172%, the mining industry has increased its water withdrawal by 64%, but there has been a 5% decrease in water withdrawal for the manufacturing sector. Irrigation is the largest consumer of water, only 30% of the water withdrawn is returned, and the total irrigated area has increased over 400% since 1951. The trend, with the exception of manufacturing, is an ever increasing demand for water as a resource.

While it would appear that water is abundant, particularly in Canada, only 0.01% of the globe's water is both fresh and accessible.

Water resources are limited, even in the Canadian context, either through straightforward supply shortages and degraded water quality, or indirectly through constraints on development capital. Water development must eventually take place on a sustainable basis, and demand management strategies are one means of achieving this (Tate 1990:5).

Water conservation or demand management as a strategy may result from different jurisdictional priorities. In the Prairie provinces for instance, supply availability can be the limitation, whereas in some Atlantic provinces cost for infrastructures is a greater constraint. Regardless of the rationale, water conservation is one method of reducing the many costs associated with its supply.

Municipal water generally requires treatment of the water before and after use, whether its source is surface or groundwater. The Canadian Environmental Directory (1992) states that the total government expenditure for water purification/supply for 1987-88 was \$1,820.8 million. The total government expenditure for sewage collection and disposal for the same period was \$1,164.2 million. A reduction in municipal water consumption would result in cost saving to both water intake treatment and wastewater treatment.

Increased demand will also mean increased infrastructure costs. The Green Plan (1990) estimates the cost of replacing existing Canadian water works and wastewater systems is over \$100 billion, but because the cost of water is so low, water revenues cannot meet new infrastructure costs nor cover needed maintenance. The marginal cost, or cost of producing an additional amount, is rarely used in pricing structures.

When a water pricing formula is based on a flat rate (not metered), not a volume-based rate (metered), there is no economic incentive for the consumer to monitor the amount of water used. Across Canada, the most common type of rate schedule used by municipalities is a flat rate (Tate and Lacelle 1992). The flat rate does not encourage conservation, therefore use and its associated costs will likely increase more under the non-metered pricing system.

The use of water within other sectors also has its costs. The provinces pay an average of 85% of the total monetary cost of supplying water for irrigation on the prairies. Generally, pricing is based on area irrigated, not on metered volume of water used. Irrigation is one of the most inefficient of water uses, due to problems of leakage, evaporation, and seepage from ditches. When price is based on area, not volume, leakage is not a financial concern to water users.

Industry has a large water withdrawal rate, which is often much greater than its assumed consumption of water. (Water that is returned to the source in a degraded form is not considered within consumption rates.) Where an industry relies on its water source from a municipal infrastructure, much of the true cost of the water is borne by the ratepayers and municipality due to economies of scale. Most industries though, are self-supplied, therefore these costs are their own.

The larger economic issue is that of water degradation costs associated with industrial use. Increasingly stringent water quality standards mean increasing costs to both government and industry, but more efficient use of water in industry can reduce costs for both intake and discharge treatment. A study of fourteen industry groups, surveyed in 1986 by Tate and Scharf (1992), indicates that the industries spent \$68.9 million annually on intake treatment and \$116.6 million on discharge treatment.

Tate (1990) provides several examples of the cost savings to industry when water is used more efficiently. For instance, a Polaroid plant in Massachusetts reduced its water use by 50%, through employee awareness, metering, retrofitting, recycling and a variety of other technical means. The one-time program cost of \$550,000 resulted in an annual saving of \$545,000.

Increasing demand on water supplies from all sectors coupled with increasing costs for distributing and maintaining the quality of the water supply, suggest a need to examine government policies of water management.

Water resource management has been characterised as "a bewilderingly complex administrative galaxy" (Gibson 1969). Administration of water management policies is accomplished through three levels of government, federal, provincial and municipal, as well as a variety of government appointed administrative bodies such as the Prairie Provinces Water Board. The transborder nature of some water sources means the traditional management of the resource on a province-by-province basis can be difficult. Therefore, governments are increasingly working co-operatively to solve water management problems.

Water conservation or demand management is one strategy governments are using to manage water. It will reduce the costs for supply, as well as conserve the resource if availability is limited. Demand-side management programs are used frequently in the energy sector to reduce the demand for hydro electric power and to shift expansion costs to the future.

## **2.0 POLICY SURVEY METHODOLOGY**

In order to better understand what provincial and federal government water conservation initiatives are, a survey of existing and proposed policies and policy instruments was conducted. The resulting report provides an overview of the current trends in water conservation policies, identifies successes and gaps in policy initiatives, and outlines options for policies and policy instruments that can be utilized by other provincial and territorial governments. The report was prepared in conjunction with the CCME Secretariat, for Canada's First National Conference and Trade Show on Water Conservation, in Winnipeg, February 1993.

Water conservation for this survey refers primarily to quantity, not quality, and has been referred to elsewhere as demand management. The first portion of the survey examined policy: existing and proposed legislation regarding water conservation specifically, policies

without legislation, other water legislation, and government priorities and targets for water conservation. The second portion of the survey identified policy instruments: administrative bodies implementing water conservation policies; regulations, codes and standards; water pricing formulas; programs to encourage conservation in a variety of sectors; demand side management educational programs; joint management projects; and other initiatives.

The survey was distributed to administrators within federal, provincial and territorial governments identified by the CCME Secretariat. In order to gather more complete information, it was intended that the survey be completed by two administrators representing different aspects of water management for each government. For instance, in Manitoba the survey was completed by the Water Resources Branch of the Department of Natural Resources, and the Manitoba Water Services Board of the Department of Rural Development. In four jurisdictions, New Brunswick, Yukon, Northwest Territories, and British Columbia, only one survey was distributed. Four surveys were sent to federal departments. Water management in the territories is largely federally administered; responses state where it is a territorial or a federal initiative.

Of the 24 surveys distributed, 19 were returned. All jurisdictions completed at least one survey. The survey results are limited in that not all government departments responsible for water management were surveyed due to time constraints. As well, individual interpretation of questions varied as did the degree of detail to which the surveys were completed. An attempt was made to complete missing and contradictory information through telephone interviews. Due to the complexity of water management and its interdepartmental jurisdiction, it is likely that some programs have been missed and do not appear in the survey results.

### **3.0 SURVEY RESULTS**

#### **3.1 POLICY**

The first section of the survey asked respondents about legislation regarding water conservation policies, and other forms of policy. Individual jurisdictions stated if conservation was a component of the legislation. Independent review of the acts was not undertaken.

##### **3.1.1 Policy Overview**

Table 1 summarizes the responses on policy initiatives. Legislation is perhaps the most concrete indication of policy. Four of the thirteen jurisdictions have legislation which specifically addresses water conservation: Alberta, Saskatchewan, Ontario, and Department of Indian Affairs and Northern Development Canada (DIAND) on behalf of the Northwest Territories.

The key elements of the legislation were identified as either establishment of an administrative body responsible for water conservation, or ministerial power to control licences or permits for water use. Of the four jurisdictions that have legislation, the Northwest Territories (DIAND) and Ontario have regulations that support the water conservation aspect of the legislation, indicating a further commitment to the policy.

<b>Table 1: JURISDICTIONS WITH POLICY INITIATIVES</b>			
<b>Policy Initiative</b>	<b>Total Yes</b>	<b>Total No</b>	<b>Total Response</b>
Legislation specifically on water conservation	4	9	13
Accompanying regulations	2	2	4
Policies without supporting legislation	7	3	10
New legislation planned	4	9	13
Priority areas identified	4	8	12
Targets established	2	10	12

Four jurisdictions are planning new legislation on water conservation: Yukon, British Columbia, Alberta, and Ontario. This will result in two additional jurisdictions having legislation: Yukon and British Columbia. Alberta and Ontario will be adding to existing water conservation legislation. Most new legislation will deal with pricing and demand-side management education.

Seven of ten respondents indicated that they had water conservation policies without supporting legislation. They are the federal government, Northwest Territories (DIAND), Yukon, Alberta, Saskatchewan, Ontario and New Brunswick.

Another indication of the sophistication of the policy is the establishment of priority areas and/or targets. Four jurisdictions have identified priority areas: the federal government, Northwest Territories, British Columbia and Ontario. Two have established targets, Alberta and Ontario. Ontario has established both priority areas and reduction targets.

Other legislation concerning water can complement or conflict with water conservation policies. Two key areas were addressed in the survey: water rights allocation, and water quality regulations. Not all jurisdictions have water rights allocation legislation. Of those that do, two stated their allocation mechanism encouraged conservation, and six said it did not. Four jurisdictions stated that their water quality regulations encouraged conservation, and eight said their regulations did not.

Two additional questions were asked in this section of the survey, that do not deal directly with policy. Respondents were asked how many agencies of their government were involved in water conservation management. The average, three to four agencies, would indicate the complexity of water management and perhaps the need for a coordinating body in each province or territory. The other question was designed for information exchange with other jurisdictions, and asked for the types of information utilized for policy decisions on water conservation.

### 3.1.2 Detailed Responses on Policy

The following is a more detailed examination of the responses to the first section of the survey.

#### *Specific legislation on water conservation*

There are four governments that stated they have specific legislation addressing water conservation: the Northwest Territories (DIAND), Alberta, Saskatchewan, and Ontario. They include the Northern Inland Waters Act (to be changed to the Northwest Territories Water Act and Yukon Water Act, as resources are transferred to the territorial governments), the Saskatchewan Water Corporation Act, the Alberta Water Resources Act, and the Ontario Water Resources Act.

#### *Key elements of the legislation*

The Northern Inland Waters Act (Canada) key elements include promotion of wise use of water resources, regulation of water use and waste disposal, and establishment of a Water Board "to provide for the conservation, development and utilization of water".

The key element of the Saskatchewan Water Corporation Act is that "the powers and purpose of the Corporation are...to promote the economical and efficient use, distribution and conservation of the water and related resources of Saskatchewan".

In the Alberta Water Resources Act the main provision for conservation allows the Minister to cancel a licence if the licence holder is found to have wasted water, but due to the difficulty of defining "wastage" it has never been used.

Under the Ontario Water Resources Act a permit is needed from the Ontario Ministry of the Environment if more than 50,000 litres/day are to be used from either a ground or surface source.

#### *Regulations accompanying water conservation acts*

Of the four jurisdictions that state they have water conservation legislation, two have accompanying regulations: the federal government and Ontario. The title of the federal regulations is Regulations Respecting Inland Water Resources to the Northwest Territories. Ontario has the Ontario Plumbing Code of the Water Resources Act, which ensures efficient plumbing fixtures. Alberta has regulations accompanying the act, but they do not address conservation.

#### *Policies not supported by legislation*

Seven jurisdictions state they have policies addressing water conservation that are not supported by legislation: the federal government, Northwest Territories (DIAND), Yukon, Alberta, Saskatchewan, Ontario and New Brunswick.

The federal government has the Federal Water Policy, the Green Plan which establishes "Environmental Stewardship" as a priority, and the Federal Water Conservation Plan. In the Northwest Territories the Water Resources Division of Indian and Northern Affairs Canada is drafting a policy on water conservation; details were not given.

The Yukon Conservation Strategy addresses water management, for example to “support technological advances in the placer mining industry to reduce need for large quantities of water”, and to “increase public awareness of methods for reducing excessive use of water”.

Alberta has a number of policies supporting water conservation:

- development of a social consciousness toward the creation of individual obligations to use water without waste;
- emphasis on greater water use efficiencies to reduce water losses and excessive use;
- water conserving technology in irrigation; and
- water reuse where feasible.

Saskatchewan states that it is in the process of developing a proposed water conservation program.

Ontario is developing a series of goals, sub-goals, objectives, policy statements and voluntary actions.

New Brunswick encourages industries to recirculate water to permit better treatment of waste water. As well, New Brunswick Power encourages energy conservation through devices such as water saver shower heads. (Manitoba Hydro and Ontario Hydro are examples of other provinces that also have demand side management programs that can result in water conservation, but these were not included in their responses.)

Prince Edward Island stated it does not have any formal policies, but that a draft conservation strategy does identify water conservation as requiring attention in the future.

### *New legislation*

Four jurisdictions are planning new or renewed legislation to encourage water conservation: Yukon, British Columbia, Alberta, and Ontario.

The Yukon has new legislation in preparation for the transfer of responsibility from the federal government. British Columbia is developing new legislation that will likely include pricing incentives, transferable water rights, and demand-side management education programs. One of the key elements Ontario is likely to include is “conservation before expansion”.

Alberta states that four general approaches to new legislation are being considered:

- 1 Making water rights transferable so that water rights holders would have an incentive to make the most efficient use of water.
- 2 Developing more education and financial support programs to encourage conservation.
- 3 Adding terms and conditions for conservation and water use technology into new water licences.
- 4 Using water pricing in such forms as higher licence fees, changing rate structures for government-owned water projects, and possibly water royalties.

Other changes in the legislation, in areas such as planning, licensing and enforcement, are also expected to encourage more effective use of water resources in Alberta.

### *Water rights allocation legislation and conservation*

Not all jurisdictions have water rights allocation legislation. Of those that do, two stated that their allocation mechanism encourages conservation: the Northwest Territories (DIAND) and Ontario. The federal government administers water rights legislation in the Northwest Territories, where water licences specify water quantities allowed for withdrawal. In Ontario a permit under the Water Rights Act can limit withdrawal for conservation purposes.

Six jurisdictions stated that the allocation mechanism under water rights legislation does not encourage conservation: Yukon, British Columbia, Alberta, Saskatchewan, Manitoba, and Nova Scotia. British Columbia stated that it is a "first in time first in right" allocation. Alberta stated that existing water rights were created to provide full protection for rights holders, with minimal obligation, which makes it difficult to encourage or force people to put water to more, better or even different use. Manitoba stated that under the Water Rights Act, there is no charge for water used by the two largest consumer categories - municipal and irrigation - therefore, there is no incentive for these users to conserve water. Further, the rates charged for industrial use are also not high enough to encourage conservation. Nova Scotia stated its legislation does not encourage conservation because fee rates are based on a declining block structure, which means the price is reduced as quantities used increase.

### *Water quality regulations and conservation*

Four jurisdictions stated that their water quality regulations encouraged conservation: Northwest Territories (DIAND), British Columbia, Saskatchewan, and Ontario. Northwest Territories (DIAND) stated its regulations encourage conservation because there is a charge for most water uses, except municipal, and regular licence reviews. British Columbia stated that withdrawal rates have been reduced to improve waste treatment. Saskatchewan stated that their Water Quality Management Policy promotes conservation. Ontario stated that its Municipal Industrial Strategy for Abatement Regulations encourage less discharge due to costs of treating effluent and industrial discharges. New Brunswick answered no to this question, but there is indication otherwise, as discussed below.

Eight jurisdictions stated that their water quality regulations did not encourage conservation: the federal government/Prairie Farm Rehabilitation Administration (PFRA), Yukon, Northwest Territories, Alberta, Manitoba, Nova Scotia, New Brunswick, and Prince Edward Island. Alberta stated that the Alberta Environmental Enhancement and Protection Act regulations do not deal with water conservation in terms of efficiency of use, but conservation of water quality is addressed elsewhere in that legislation. Nova Scotia stated that assimilative capacity is an accepted practice.

New Brunswick stated that regulations do not specifically address conservation, but industries are encouraged to recirculate water for better waste treatment, and the approval mechanism of the Watercourse Alteration Regulations can limit withdrawal of stream flow. As well, under the Environmental Input Assessment Regulation, proposed water works with capacity of greater than 50 cubic meters per day are subject to screening for environmental impact assessment. This indicates that some of New Brunswick's water quality programs can encourage water conservation.

One of the main issues in water quality management with regards to conservation or demand management is the issue of dilution. The practice of diluting pollution in large quantities of water does not encourage water conservation. There is an increasing move away from this practice. As concerns over water quality increase, industrial recirculation has increased (Tate 1990).

### *Priority sectors for water conservation*

Four jurisdictions have identified specific use sectors as priority areas for water conservation: the federal government, Northwest Territories, British Columbia and Ontario. The federal government identified federal facilities as a priority. The Northwest Territories identified municipal/household use as a priority. British Columbia identified irrigation in agriculture, and Okanagan residential use as priorities. Ontario identified household use as the first priority, then institutional, industrial and municipal (Hydro use has not been addressed yet).

Alberta stated that it did not have explicit province-wide conservation priorities, but that specific conservation programs have been targeted at in-situ oil recovery projects (recycling guidelines) and municipal water use (through terms and conditions of grants for water and wastewater treatment facilities).

Eight jurisdictions stated they have no specific sector identified as a priority for water conservation.

### *Water conservation/reduction targets*

Two jurisdictions have established water conservation/reduction targets: Alberta and Ontario. Alberta, under the recycling guidelines for in-situ oil recovery, has established targets where all such projects using in excess of 500 cubic metres of water per year and all pilot projects are required to implement water recycling demonstration projects. Target recycle rates are developed for each project, based on the amount of produced water, up to a maximum of 100%. In Ontario the target is to hold potable water use constant until the year 2011.

Ten jurisdictions reported they have not established targets.

### *Number of departments/branches/administrative bodies*

Respondents were asked to list the departments, branches, and governmental administrative bodies currently involved in water conservation management within their government. The number of agencies per jurisdiction ranged from none to ten, with the average being three to four agencies.

The question asked specifically about water conservation management. Had it asked for water use, the number of agencies involved would likely have been much greater. Water management was characterized earlier as a "bewilderingly complex administrative galaxy". All three levels of government, numerous administrative bodies, and increasingly inter-governmental management groups have an impact on water use, and therefore, water conservation policy.

### *Information sources for policies/projects*

Respondents were asked what sources of information (e.g., cost benefit analysis) they were using to assist with decision-making on water conservation policies/projects. Many were using Environment Canada publications, AWWA manuals, and journals. In addition several stated they used information specific to their jurisdiction.

The territorial government of the Northwest Territories uses data on available technology, current usage, cost/benefit analysis, health impact, and costs. Manitoba Rural Development, Water Services Board, is hoping to carry out a pilot program in a community to establish cost/benefits of water conservation.

Alberta Environment maintains a water use data base that provides current and historical records on most types of licensed water use. The department has also worked with other departments to commission consultant studies that have identified and evaluated water conservation projects and policies.

British Columbia is designing an information system for water policy and management throughout the province. The federal government is just completing a water pricing manual and the Federal Water Conservation Plan.

## 3.2 POLICY INSTRUMENTS

The second section of the survey asked respondents about the policy instruments used to encourage water conservation.

### 3.2.1 Overview of Policy Instruments

Table 2 provides a summary of policy instruments, either existing or proposed, as reported by each jurisdiction.

Eleven of the thirteen jurisdictions have some type of policy instrument that encourages water conservation.

Trends in water conservation policy can be seen in the targets of programs or strategies. One trend is to work with the large water users, municipalities and industry, as well as agriculture where it is a significant user.

Another trend is that water conservation policies, as indicated by the presence of policy instruments, tend to be in jurisdictions where availability of supply is a concern, for instance the Prairie provinces or programs in British Columbia that are largely oriented to the Okanagan Valley. This could indicate that concern about quantity of supply is a greater motive for conservation than costs for infrastructure and treatment. One province indicated that water supply was not a concern but infrastructure and treatment costs were, yet it has no programs or strategies for conservation.

Table 2: POLICY INSTRUMENTS BY JURISDICTION: Existing and Proposed													
Policy Instrument	BC	A	S	M	O	Q	NS	NB	PEI	NF	NWT	Y	C
Coordinating body	E	E	E		E		E				E <sub>F</sub>	E <sub>F</sub>	
<b>Programs or strategies to encourage conservation with:</b>													
Municipality	P	E	E	E,P	E,P	E					E,P		E
Industry	P	E	E	E,P	E	E		E			E,E <sub>F</sub>	P,E <sub>F</sub>	
Agriculture	E	E	E		E,P								
Procurement					E								P
Government Buildings					E						E,P		E
Crown Land					E								E
<b>Other strategies:</b>													
Standards/ Codes/Regs					E								E
Education	E	E,P	E		E,P						E	P	E,P
Conservation Pricing	P	P	P		P		P						P
Joint Projects	E	E			E	E	E				P		E,P
Other Initiatives		E		E	E								E
E: Existing, P: Proposed, C: Federal Government, F: Federal Jurisdiction													

The most frequently used policy instrument was a program or strategy to encourage conservation with industry. Nine of the thirteen jurisdictions had such a program. The next most frequently used policy instruments to encourage water conservation were: a coordinating body, programs with municipalities, and education programs. It is interesting to note that only five provincial jurisdictions are planning to use, or do use, a pricing formula to encourage conservation. The least frequently used tools were procurement policies, strategies or programs on Crown lands, and design standards or building/plumbing codes. Only two jurisdictions each used or were planning to use these methods to encourage water conservation. The next least frequently used strategy was water conservation in government buildings, where three jurisdictions had such a program.

Ontario has existing or proposed programs/strategies in each of the policy instrument areas covered by the survey.

### 3.2.2 Detailed Responses on Policy Instruments

The following is a detailed examination of the responses to the second section of the survey, which includes program descriptions where provided.

#### *Coordinating body for water conservation*

Seven jurisdictions identified an administrative body to coordinate water conservation. The Northwest Territories and Yukon have federally appointed Water Boards. Alberta has a Water Conservation Section within the Planning Division of Alberta Environment. The Saskatchewan Water Corporation coordinates water conservation in that province. Ontario's coordinating body is the Inter-Ministerial Water Efficiency Council. In British Columbia and Nova Scotia, the Departments of the Environment are recognized as the lead agencies.

#### *Programs or strategies to encourage conservation*

Respondents were asked if they had programs or strategies to encourage water conservation in a series of areas: municipalities/counties, industry, agriculture, procurement policies of their government, government buildings, and Indian Reserves/Crown lands.

- *Municipalities/Counties*

Eight jurisdictions reported either existing or proposed strategies or both, with municipalities/counties. The Federal Water Policy makes it policy not to fund new water/sewer infrastructures in order to encourage realistic pricing for both services. The Northwest Territories' existing strategies include full-cost pricing, universal metering, and best technology. Their proposed strategies include technology upgrades and public education on wise water use. British Columbia has a proposed demand-side management awareness program for municipalities. The Alberta Municipal Water Supply and Sewage Treatment Grant Program, managed by Alberta Transportation and Utilities, was recently amended so that the size of the grant was reduced by 10% for municipalities which had higher than normal water use, did not have meters, or did not have conservation-oriented rate structures.

Saskatchewan's existing programs include promotion of leak detection and promotion of the reuse of treated sewage for irrigation where conditions permit (about 20 systems are in place including the cities of Moose Jaw, Swift Current and Lloydminster).

In Manitoba financial incentives are available to ensure all connections are metered and for renewal of old water mains. Ontario's programs include conservation as a condition for grants, conservation equipment studies grants, and creation of a technology transfer sharing program.

In Quebec, le Programme d'assainissement des eaux (PAEQ), initiated in 1978, works in conjunction with municipalities to build or upgrade treatment plants, a component of which includes water use reduction aimed mainly at industry.

- *Industry*

Nine jurisdictions reported strategies or programs to encourage conservation by industry.

The federal administration in the territories encourages the mining industry to recycle

water where possible, and licences allocate water quantity and approved sources. The Yukon Conservation Strategy promotes wise use of water including encouraging mining industries to reduce water use. The Northwest Territories' existing strategy includes full-cost pricing and universal metering.

British Columbia's proposed program of demand-side management will likely utilize economic incentives and tax expenditures. Alberta has recycling guidelines for the in-situ oil recovery industry, to minimize the amounts of potable water being used for oilfield injection.

Saskatchewan actively promotes recycling and reuse of industrial process and cooling water to minimize withdrawal and release to receiving waters. Recent successes include a zero-effluent pulp mill at Meadow Lake, a zero-effluent fertilizer plant at Belle Plaine, and a zero-effluent coal-fired generating station at Shand.

In Manitoba existing and proposed programs include financial incentives for installation of water recycling/reuse mechanisms within plants. Ontario has a program for funding water audits, and a proposed voluntary technology transfer program. Quebec has a program tied to the PAEQ, that works with industries to reduce withdrawal and discharge. New Brunswick encourages industries to recirculate water to reduce withdrawal and permit better treatment of wastewater.

- *Agriculture*

Four jurisdictions reported programs to encourage conservation in the agriculture sector.

The Ministry of Agriculture in British Columbia has a program designed to reduce costs of irrigation by changing irrigation patterns, retrofitting, and upgrading. The Conservation Branch of Alberta Agriculture provides farmers with information on site-specific water conservation techniques, and Alberta Environment has been rehabilitating irrigation canals to reduce leakage and improve efficiency. Saskatchewan has a program to encourage producers to use irrigation water effectively. Ontario's CURB program will pay for water efficiency fixtures in farm houses to decrease flow to septic beds, and is also developing other strategies.

- *Procurement*

Two jurisdictions reported procurement policies within their government to encourage conservation. The federal government has a proposed follow-up phase to the Water Conservation Plan for Federal Facilities that will include procurement guidelines. Ontario has an existing program where contract documents include specification of water saving fixtures, and the building product specification list has been expanded to include water efficient products.

- *Government buildings*

Three jurisdictions reported programs to encourage conservation in government buildings.

The federal government has the federal facilities plan that includes environmental auditing for water conservation. In the Northwest Territories, the existing program includes full-cost pricing, universal metering, and best technology, and there is a proposed program for technological upgrading.

In Ontario, water audits have been conducted in ten government buildings, four demonstration washrooms have been implemented, and water efficient fixtures will be installed in all future alterations, repairs and all new building construction projects. Also replacement of water inefficient fixtures will take place in public housing units, and efficient toilets will be used in new public housing units.

- *Indian Reserves/Crown Lands*

Two jurisdictions reported programs or strategies for Crown lands (e.g., parks). Crown lands would be included in the Water Conservation Plan for Federal Facilities. Ontario's program for government buildings would also include Crown lands. No jurisdictions have programs with Indian Reserves.

### *Standards, codes, regulations*

The federal government and Ontario reported design standards or building/plumbing codes or regulations for water conservation/ efficiency.

### *Demand-side management education*

Seven jurisdictions reported existing or proposed demand-side management education for water conservation.

The federal government has published a water conservation fact sheet, and a booklet "Water, No Time to Waste", and has a program proposed in the plan for federal facilities. Yukon has proposed a program under their Yukon Conservation Strategy. The Northwest Territories has an existing program using television and pamphlets. British Columbia has brochures and outreach to stakeholders (municipalities and irrigators). Alberta has developed general educational materials to inform consumers and has plans for training seminars for municipal officials and consultants regarding demand-side management. Saskatchewan Environment and Public Safety has published a brochure for conservation in the home and for municipalities. Ontario has a proposed program designed to work with local school boards to address water conservation in the home, has run ads in all Ontario daily newspapers, and four brochures on efficient water use were distributed to 90,000 government employees.

Quebec has not undertaken an education program as there is a successful program operated by l'Association québécoise des techniques de l'eau, a non-profit organization. It has been operating for 20 years, and combines radio, newspaper, and television advertisements targeting reduction of lawn watering and other water conservation measures. Studies have demonstrated a significant reduction in water use as a result of this program.

### *Water pricing formula*

Five jurisdictions reported plans to develop a water pricing formula to encourage conservation: British Columbia, Alberta, Saskatchewan, Ontario, and Nova Scotia. The federal government is assisting development of a water pricing manual which will encourage conservation pricing.

British Columbia will remove the declining block price structure and will likely increase prices to reflect full costs.

In Alberta water pricing to encourage conservation will be part of its future water resources

legislation, but details of the price structure have yet to be determined. While there is general support for higher licence fees for holders of new water rights, there is moderate support for a universal user-pay policy for water services, and considerable concern about the introduction of water royalties or rents. At a municipal level, existing grant programs are being modified to encourage municipalities to adopt more conservation-oriented rate structures.

The Saskatchewan Water Corporation proposes to implement principles of full-cost recovery in developing water delivery systems. The Ontario program is under development and no details were given. Nova Scotia stated that the fee rate has been modified in recent years to decrease the slope of the declining block rate.

The Quebec government is in the initial stages of participating with key groups in evaluation of water pricing formula.

### *Joint projects*

Seven jurisdictions reported they are participating in a joint water conservation project with other governments. (The responses to this question indicate it was interpreted in a variety of ways. If interpreted in the broadest sense, it is likely all jurisdictions are involved in some joint project that has an aspect of water conservation.)

PFRA (Canada) is working with Manitoba and local water user groups to establish water conservation programs for the Town of Morris, and the Pembina Valley Water Users Association. The Northwest Territories have a proposed program with the municipal governments entitled the NWT Municipal Water Conservation Strategy. British Columbia is involved in several joint watershed management projects, where an aspect of the project is conservation.

In Alberta several joint conservation projects are being initiated or are in place with municipal governments. In the Town of Cochrane, Alberta Environment provided educational material to support the town's water conservation efforts. In the Town of Irma, Alberta Environment helped design utility bill inserts that informed consumers about the benefits of conservation. Currently, Alberta Environment is cost-sharing installation of water meters with the Town of Irvine, as part of a study to document the benefits of metering and the alteration of water pricing practices.

The Ontario government is working with Environment Canada on Canada's First National Conference and Trade Show on Water Conservation, and works with industry on the Green Industry Strategy. Quebec is working with the municipalities and industries under the PAEQ. Nova Scotia is working with the federal and municipal governments on a local watershed project, the Clean Annapolis River Project.

### *Other initiatives*

Four jurisdictions reported other water conservation initiatives. PFRA (Canada) is working with three rural Saskatchewan towns to complete a pilot study on the impact and effectiveness of water conservation measures on rural prairie communities. As well, PFRA is preparing a policy paper that would identify the potential for conservation measures in current and future programming.

Alberta's other conservation initiatives consist of public education through presentations to general interest groups, regional governments, and various stakeholder groups. Other

initiatives in Manitoba include encouraging municipalities to take advantage of financial incentives to renew old cast iron watermains and to meter all services, and a pilot study to establish the cost/benefits of instituting conservation initiatives in towns. Ontario's other initiative is a program where prior to a water or sewage treatment plant expansion, proof of water conservation must be provided.

#### **4.0 CONCLUSION**

Canadians are the second largest water consumers in the world. The trend, be it for municipal use, industrial use, or agricultural use, is to an ever-increasing demand for water as a resource. The costs for supplying the resource are also increasing, be that infrastructure costs, or pre- and post-treatment costs, or marginal cost of supply, yet Canada has the lowest-priced water of all developed nations. This price rarely, if ever, covers the cost of supplying the resource. At the same time governments are facing the need to increase expenditures to accommodate increasing demands and to upgrade systems. One method of addressing increasing costs that result from increasing demand is demand management or conservation, a method frequently used in the energy sector.

A survey of provincial, territorial and federal governments indicated that the use of policies and policy instruments to encourage water conservation is increasing. Governments are moving more to demand-side management as a means to reduce costs of supplying water, and to conserve the resource where quantity of the supply is a concern. There is some indication that the concern about availability of supply is a greater motive for conservation than the cost for providing that supply. The trend is to establish programs or strategies with large users, such as municipalities and industry. Over half of the jurisdictions have a coordinating body to orchestrate water conservation. The majority of jurisdictions that responded state that their water rights allocation mechanisms and water quality regulations do not encourage water conservation. Less than half of the jurisdictions use water pricing formulas to encourage conservation. Few jurisdictions are utilizing water conservation strategies in procurement guidelines, government buildings, on Crown lands, or with standards and codes. Over half of the jurisdictions make use of education or awareness programs to encourage efficient water use. The fact that a variety of joint projects and other initiatives have been undertaken by governments across Canada indicates their recognition of the benefits of water conservation.

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