

Economic and Financial Tools

A. 'Hard' Conservation Measures

I. Federal and Provincial Initiatives

1. Economic and Financial Tools

"Hard" conservation measures are those initiatives which are more demanding or restrictive in their approach to water use efficiency. Hard measures include legal, economic and financial tools, as well as operations and management tools.

"Economic and Financial Tools" presented in this and the two following sections include: funding and granting conditions, pricing structures, metering, and fines.

Community, Aboriginal and Women's Services, Ministry of

Funding

- The Ministry of Municipal Affairs and Housing adopted a water conservation policy in 1992. The policy states:

"The Ministry encourages water conservation initiatives, and supports consumption-based water rates. For new water supply or treatment projects it is important that water conservation be part of project planning. As funding is limited, priority will be given where water conservation measures and universal metering are in place."

Grants to Municipalities Promoting Wise Water Use

- Presently, municipalities applying for infrastructure grants may be required to demonstrate that the proposed project uses water efficiently; and that a **water audit** and **leak detection programs** have been implemented.
 - As funding is limited, priority will be given where universal metering and an increasing block rate schedule is applied.
 - Applications for water treatment projects must be supported by accurate records of water consumption and quality over a period of years.
 - To ensure sustainability, an applicant may be required to document that it has an established maintenance program, and has made provision for full cost recovery for renewal or replacement through reserve funds or accounts.

Federal Government

Analysis of Economic Benefits of Water Conservation

- The Fraser River Action Plan (FRAP) contributed towards several programs to analyze the economic benefits of water conservation. In partnership with Simon Fraser University, FRAP contracted a study to outline several water conservation initiatives along with their monetary benefits to the university (unpublished). FRAP then helped the University fund one of these projects as a demonstration of the water and cost savings that could be accomplished. The project, which was a conversion of boiler room air compressors to air cooling from water cooling, conserved over 60,000 cubic meters of water per year, which generated an annual cost savings of \$29,000 to the University. The payback period for the capital costs of the project is under 3 years based on the cost savings. Since completion of the project, the university is now examining ways to fund similar conservation activities on campus. However, facilities managers at the university have pointed out the difficulty in obtaining the necessary capital for conservation activities even when the payback periods are very short. The difficulty arises from separation of budgets into capital and operating budgets, with no mechanism available to replenish capital budgets from operating cost savings beyond a single fiscal year.
- Physical plant staff from Simon Fraser University also presented the technical details of the pilot project at several water conservation workshops organized by GVRD staff. FRAP worked with the GVRD on economic analysis of savings to various industries, with particular analysis on carrying out water audits at selected establishments to demonstrate the possible savings. The GVRD then used these results at several workshops with industries to promote water conservation and demonstrate the intrinsic benefits to industry.

Analysis/Study of Universal Metering

- FRAP also partially funded an economic analysis of universal water metering in the GVRD. While the water savings from metering and user based pricing had been well established in other jurisdictions, the economic costs of installing meters is substantial. The question remained whether or not the economic benefits, which are primarily savings in long term expansion costs, outweigh the capital costs. GVRD staff felt that this unanswered question was a major impediment to acceptance of metering at the political level. They also pointed out the fact that the public in general have been wary of metering in the GVRD area, and that even voluntary metering programs, where householders have the option of paying by a flat rate or by a metered rate, had been rejected in the past.
- FRAP therefore contributed funds to an analysis that compared the capital costs of large scale meter installation in the GVRD to the economic savings. The study, published by the GVRD showed that metering was economically viable if indoor metering sites for each household could be used. The capital cost of outdoor meter sites is much more expensive, and would render the project unfeasible. As a follow-up to the study, the GVRD is now examining the technical aspects of indoor versus outdoor meter installation.

II. Regional and Municipal Initiatives

2. Economic and Financial Tools

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Capital Regional District — Water Department

Analysis of Pricing Structure

- A retail billing analysis was completed in 1994 and updated in 1997.
- Constraints: no jurisdiction at retail

Seasonal Rate Structure

- Was rejected by retailers

Incentives or Grants to Organizations Promoting Wise Water Use

- Costs: \$35,000
- Grants were offered to organizations promoting wise water use (1994 — 1997)

Chilliwack, District of

Cost/Benefit Analysis

- The District does extensive cost benefit analysis for each project that it undertakes. These analyses are done by District staff on small projects with long range planning costs being provided by outside consultants.

Assessment or Analysis of Pricing Structure

- The District of Chilliwack hires a financial group to do long range planning of its financial structure. The last Water and Sewer Rate Study was performed by Ernst and Young in 1993. This study projected costs and population to the year 2001.
- Through the Sewer and Water Bylaws, the District uses a flat rate fee. This fee is reviewed on a yearly basis.

Cowichan Valley Regional District

Analysis/Study of Universal Metering or Metering Pilot Program

- Keys to Success: to be implemented over 5 to 8 years
- Costs: \$100,000

Assessment or Analysis of Pricing Structure

- Keys to Success: done internally

Fines (for excess use)

- Keys to Success: double rate

East Kootenay, Regional District of

Metering Pilot Program

- A pilot metering program will be carried out in 1998.
- Implementation Costs: \$1,000

Greater Vancouver Regional District — Water District

Analysis/Study of Universal Metering

- The question of whether or not to meter residential consumption has been asked a number of times since the GVWD was created in 1924. However, past assessments indicated that installing, reading, and maintaining residential water meters was not a cost-effective water management strategy. Faced with rapid population growth and increasingly stringent provincial and federal drinking water treatment requirements, the District has started to re-evaluate the issue of residential metering. There remains an abundance of water, but the cost to store, treat, and distribute that water is significant. Residential metering is being considered as one option to help reduce the capital expenditure requirements necessary to continue to provide high quality, reliable water service in a cost-effective manner.
 - A preliminary study was presented to the GVWD Administration Board in 1997. The study presented a preliminary analysis of the potential costs and benefits of residential metering.
 - Subsequent to completion of the preliminary analysis, a public opinion survey, detailed analysis of the region's housing stock (to more accurately estimate the potential costs of metering), a more in-depth analysis of the Water District's long term capital improvement plans and a detailed financial analysis were initiated. It is anticipated that a final decision on the issue of metering will be arrived at in 1998.

Assessment or Analysis of Pricing Structure

Seasonal Pricing Study

- The objective of the Seasonal Pricing Study is to identify and summarise the major issues and ramifications related to seasonal water rates, at wholesale and retail levels within the GVWD. The study includes: detailed information on the potential costs and benefits of seasonal pricing; an overview analysis and discussion of the financial and administrative issues to be considered in designing and implementing a seasonal wholesale rate structure; a detailed description of the rate structure design process; detailed design, including financial analysis, of a defensible seasonal wholesale rate structure for the GVWD, including an estimate of the impact on water demand, and; a discussion of the implications of seasonal pricing on GVWD member municipalities and end users.

Kamloops, City of

Analysis/Study of Universal Metering or Metering Pilot Program

- Kamloops is developing terms of reference for a water utility financing strategy which will include the consideration of metering and alternative rate structures.
- Costs: \$25,000 to date

Assessment or Analysis of Pricing Structure

- Costs: \$5,000

Grants

- In 1997 the City received two grants towards the WaterSmart program. A grant was received from the Provincial Government for \$3,500 for a water use survey. An \$18,000 grant from the Federal Government was received for the school program, the irrigation test area, and the speakers' package.

Kelowna, City of

Analysis/Study of Universal Metering or Metering Pilot Program

- Costs: \$20,000

Assessment or Analysis of Pricing Structure

- The City is currently establishing a full cost recovery rate structure. The new rate structure is expected to be implemented in 1998.
- Costs: \$10,000

Keremeos, Village of

Analysis/Study of Universal Metering or Metering Pilot Program

- Costs: \$3,000

Fee Structure

- The Village currently charges a flat fee, but asserts that the only way to effect significant change in water consumption is to charge according to the amount of water used.

Nanaimo, City of

Inclining Block Rate Fee Structure

- Much of the success in water conservation is attributed to the City's expanding block rate. Category I water rates (effective January 1, 1998) are outlined below.
- Basic Charge: \$0.32240 per day
- Consumption Charge:

0 — 145 gallons per day \$0.00067 per gallon per day

146 — 220 gallons per day \$0.00311 per gallon per day

221 — 329 gallons per day \$0.00328 per gallon per day

330 — 548 gallons per day \$0.00341 per gallon per day

1,097 + gallons per day \$0.00364 per gallon per day

- A property's water charge is assessed based on the above rates over a 60 day period. For example, a property that uses an average of 240 gallons per day for 60 days would be billed for the amount \$43.10. This amount would be calculated as follows:

Basic Charge: \$0.32240 per day

Charge for first 145 gallons $145 \times \$0.00067 = \0.09715 per day

Charge for next 75 gallons $75 \times \$0.00311 = \0.23325 per day

Charge for next 20 gallons $20 \times \$0.00328 = \0.6560 per day

TOTAL: 240 gallons \$0.71840 per day

- Residential users average 100 gallons per day in the winter, and up to 200 gallons per day in the summer. Industrial users, using much greater quantities of water, fall into the highest rate categories.

Nanaimo Regional District

Inclining Block Rate Fee Structures

- In 1995 in conjunction with metering, a bylaw was passed which amended the District's pricing structure to an inclining block rate.

North Vancouver, District of

Economic and Financial Tools

- The Greater Vancouver Water District oversees the economic and financial aspects of the water system in North Vancouver.

Parksville, City of

Other

- Water and sewer billings are based on metered water consumption.

Port Alberni , City of

Analysis/Study of Universal Metering or Metering Pilot Program

- Costs: \$40,000

Port Hardy , District of

Analysis/Study of Universal Metering or Metering Pilot Program

- Costs: \$500,000 — \$700,000
- Potential Water a potential 40% reduction in water consumption

Prince George, City of

Metering Study

- During *Stage 1* of the City's three-stage policy approval process (implemented in mid-1996), all commercial and industrial water users were reviewed to ensure that water use was metered.
- *Stage 3* will be implemented in 1998. A cost/benefit analysis of universal metering for the City will be undertaken. According to the outcome of the study, a program for implementing meters and water conserving fixtures will be developed.

Assessment or Analysis of Pricing Structure

- A pricing structure assessment was conducted during *Stage 2* of the process (implemented in 1997). The City is considering charging based on a flat rate structure. Incentives offered through alternate pricing mechanisms are being evaluated in terms of their ability to recover actual costs for distribution.

Qualicum Beach, Town of

Inclining Block Rate Fee Structure

- Per unit metered water rates are applicable for single family residences, duplex units, condominiums, town house units, apartment units, mobile homes, stores, offices, businesses, health care facilities, schools, halls, churches, and any other users not defined in the schedule. Payments are assessed as follows:
 - i. For the first 800 cubic feet/month (22.65 m³) — \$1.00/100 cubic feet (2.83 m³)
 - ii. For the next 867 cubic feet/month (24.55 m³) — \$1.20/100 cubic feet (2.83 m³)
 - iii. All consumption over 1,667 cubic feet/month (47.2 m³) — \$1.30/100 cubic feet (2.83 m³)Minimum charge: \$8.00 per unit per month
- These rates per water meter are applicable to hotels and motels.
- Any person whose water use exceeds 4300.00 per six month billing period, due to an undetected leak in the waterline on the person's private property, may apply to the Director of Engineering & Development Services for relief from charges in excess of \$300.00. Relief is granted if the leak is identified and proper repairs have been completed.

Sunshine Coast Regional District

Fines (for excess use)

- \$50 fine for sprinkling outside of permitted sprinkling hours

Other

- Money is raised for the operation of the water system by collecting:

(a) User Fees — levied against every parcel of land *using* water. Non metered users are billed once a year, covering the current calendar year. New service connection charges begin the first of the month following the date of installation. (Methods of payment are indicated on the invoice.)

(b) Land Charges — levied against every parcel of land (with access to regional water) whether water is connected or not. The charge is based on acreage and is levied through the property tax account — therefore being eligible for the Homeowners Grant. (The amount of fees and taxes is set by Bylaw and then passed by the SCRD Board.)

- In 1998 there will be a change in the due date of utility billings. A recommendation was accepted by the SCRD to change the due date from July 31 on all utility billings to 45 days from the date of billing. This means that in future years the invoice (water/sewer/garbage) will be due approximately June 15th. This will save the ratepayers interest charges levied by local banks. Up to 1998 the SCRD borrowed funds for its operations prior to receiving its annual tax levies. It is estimated that this change will save the SCRD from borrowing approximately \$600,000 in short term loans.

Surrey, City of

Metering Pilot Program

- Through the metering pilot program, meters will be installed in a select sample of single family dwellings to collect data for water use trends, conservation device effectiveness, and as a public education tool. The program will also yield information about costs and help to create a knowledge base for universal metering.
- Keys to Success: making the program affordable

Assessment of Pricing Structure

- The pricing structure assessment will facilitate the implementation of a user pay rate for Industrial, Commercial and Institutional customers (for both water and sanitary sewer).
- Keys to Success: equity

Trail, City of

Cost/Benefit Analysis of Current Program or Projects

- Costs: \$12,000
- Potential Savings: \$11,000 per year

Ucluelet, District of

Metering Study

- A report by a consultant was completed in 1995.

Vancouver, City of

Metering Study

- Conducted through the Greater Vancouver Regional District

Vernon, City of

Inclining Block Rate Fee Structure

- In 1994 Vernon adopted flat and increasing block rate pricing structures. The prices, listed below, are designed to reward users for efficient use. As use increases, so too do water rates:
 - (a) up to 40 m³/quarter \$33
 - (b) 41 — 300 m³/quarter \$0.34/m³
 - (c) greater than 300 m³/quarter \$0.56/m³
- We also charge residential sewer based on quarterly (January to March) water consumption at a rate of \$1.47/m³.

III. Irrigation and Improvement Districts' Initiatives

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Lakeview Irrigation District

Metering Pilot Program

- The industrial park served by the system is part of a metering pilot project. Water use will be traced in advance of implementing commercial/industrial metering.

Osoyoos Irrigation District

Seasonal Rate Structure

- Various rates apply to the different categories of user (domestic, commercial, irrigation, and frontage tax).