

Water Use Efficiency Catalogue for British Columbia

Introduction

British Columbia is endowed with an abundance of rivers, streams and lakes. Until recently, our supply of water seemed endless. However, as the province has developed and grown in population, the increasing demand for water has put pressure on our water resources. In recognition of those pressures, the Ministry of Environment, Lands and Parks (now called Ministry of Environment) brought together a Working Group of representatives from all three levels of government, as well as industry, professional associations and interest groups to develop a Water Conservation Strategy for British Columbia.

The goal of the Water Conservation Strategy for British Columbia is to develop and promote supply and demand-side management measures for application by municipalities, water purveyors, drawers and users throughout the province, recognizing regional differences. Such a strategy will contribute to a sustained and healthy resource and provide a common framework for water management activities throughout the province by advancing water as a valuable resource which must be utilized efficiently, wisely and cost-effectively to sustain a high quality of social, environmental and economic well-being, for now and in the future.

The Water Conservation Strategy for British Columbia is expected to be released at the annual convention of the Union of British Columbia Municipalities (UBCM) in September, 1998.

As part of the development of the strategy, the Ministry of Environment, Lands and Parks (now Ministry of Environment) initiated (in February, 1998) compilation of a catalogue of water conservation activities underway or planned throughout British Columbia. The resulting information, presented in the following pages (sections "A" and "B"), will be summarized in the strategy document. It is hoped the catalogue will promote cooperation and information sharing, and serve to bring about a proactive approach to water conservation. Users of this catalogue are encouraged to view it as a menu of tools, opportunities and suggestions. They are further encouraged to contact the various levels of governments (see Section "C") to assist them in selecting and implementing those initiatives which are complementary to their local circumstances. Hopefully, they will find the guidance to lead them towards greater water use efficiency, or even to be able to develop for themselves a combination of water use efficiency, initiatives that will maximize their water savings. As a final note, it is also hoped that those users that incorporate measures listed here, as well as new and as yet unidentified initiatives, will provide new and/or updated entries for the catalogue (see Appendix B) in order that its value may be maintained for many years to come.

Compilation of the Catalogue

Research for this catalogue was initiated through the forwarding of 190 Water Conservation Case Study packages to municipalities, regional districts, and selected irrigation and improvement districts. The case study consisted of a self-administered survey. Additional information was gathered through telephone interviews. Respondents returned completed surveys by fax and mail from February 8 through March 30, 1998. All surveys returned up to March 30 are included in the compiled results. Representatives from municipal and regional administrative frameworks as well as from other operations of various sizes returned the surveys, thereby collectively providing a cross-section of the target population. A total of 127 Case Study packages, or 66%, were returned and are included in the results. Provincial and federal water-use efficiency initiatives have also been included.

Closed-ended responses have been compiled in tables attached as Appendix A. All other information is presented in catalogue form.

Note: The Water Conservation Case Study survey is not a random-sample scientific poll. However, it is representative of the organizations that have chosen to respond.

Summary

The survey of water use initiatives first inquired into the rationale for implementing efficiency measures and secondly, identified eleven broad categories of measures that may be further divided into eighty-one tools currently being implemented in British Columbia. The first three categories, discussed below, have been identified as "hard" or demanding, restrictive type measures. The remaining eight categories were identified as "soft" measures which reflect a more cooperative, educational and less demanding approach.

Rationale

Fully 76% of surveyed local governments in British Columbia indicated that they have adopted some water conservation measures as part of their water management programs. (23% of local governments indicated they had not and 1% reported they were not aware whether they had or had not adopted water conservation measures.) Among those local governments that indicated they had adopted a water conservation program, capacity constraints (65%) and the need to reduce costs (62%) were the two overwhelmingly most common reasons for doing so. Environmental stewardship reasons (33%) and potential droughts (23%) were also commonly identified. Other reasons included: more equitable distribution of costs, part of regional strategy or following the lead of another agency, and to reduce sewer flows.

A.1 Legal Tools

Mandatory restrictions (57%) and bylaws (50%) were the two most commonly identified legal tools employed by survey respondents to reduce water use. Closely related, legislation was identified as a means of increasing water use efficiency by both the federal and provincial governments. Other legal tools included regulations (23%), standards (12%) and licensing (4%). The Town of Golden reported that restrictions were implemented there during hot weather by Council resolution.

A.2. Economic and Financial Tools

Metering studies and pilot projects (21%) are the most popular economic/financial tools employed by survey respondents. Other tools include pricing structures and analysis (13%), inclining block rate structures (13%), fines for excess use (10%), cost/benefit analysis (7%), service charges (6%), and seasonal rates (4%). Funding programs are employed by both the federal and provincial governments, as are grant programs which was also reported as being used by the Capital Regional District.

A.3 Operations and Management Tools

Metering programs (16%) are the most commonly employed operations/management tools being employed by respondents who indicated having adopted water conservation measures. A further breakdown reveals 57% (of all respondents who indicated adoption of water conservation measures) employing them for commercial/industrial customers, 30% for residential customers, and 16% for agricultural/irrigation customers. 36% of respondents reported making water supply improvements. Leak detection programs, low flow/retrofit programs, and development of Emergency Response Plans were identified by respondents, 26%, 23% and 23% of the time, respectively. Watershed protection (20%), computer upgrades (16%), xeriscaping (14%) and water audits (14%) were also all commonly employed. Best management practices, sector demand studies, water re-use programs, climate comfort systems, residential programs, industrial/commercial/institutional programs, agricultural programs and other pilot projects and programs (all between 3 and 8%) were also identified. In addition, a number of "other" operations and management tools were reported including:

- Water use studies employed in the Southeast Kelowna Irrigation District and water supply and demand studies in the Town of Golden.
- A water conservation program including advertisements, interviews, enforcement of restrictions via bike patrols in the City of Merritt.
- The Village of Montrose reported that West Kootenay Power provides the Village with a lock-out timer for peak electricity consumption periods (on the water pumps), and provides an annual \$450 rebate. The pumps also have capacitors to reduce costs.

- The Village of Chase has had meter horns installed in new buildings and houses to enable possible water metering in the future.
- Treatment plants, backflow and cross connection control programs, recovery / reclamation / reuse / recycle programs, supply (quantity and quality) improvement projects, and consumption and conservation potential studies.

B.1 Planning Tools

Municipal, local or regional land-use planning, and watershed management planning were each identified by 20% of respondents reporting the use of conservation measures. A further 17% reported the use of strategic planning and strategic (utility) planning. Although, not specifically a "Made in B.C." initiative, the federal government did note the development of the National Action Plan. Both the federal and provincial governments also reported involvement in other planning initiatives and/or related committees.

B.2 Voluntary Restrictions

Voluntary Restrictions are a predominantly localized measure whereby residents are asked to voluntarily limit their use of water during dry spells and peak demand periods. Approximately 34% of all respondents employing conservation measures included voluntary measures among their conservation tools.

B.3 Educational and Information Sharing Initiatives

The federal and provincial governments have a limited role in water use efficiency education, limiting their involvement to producing public education materials, conducting workshops and technology transfer seminars, national action plan awareness seminars and participation in the province wide Water Use Efficiency Committee. Education and information sharing initiatives are more commonly a local phenomenon. The following sections detail measures being employed by local governments in the areas of residential, commercial/industrial and school program education.

B.3(i) Educational and Information Sharing (Residential) Initiatives

Local governments engaged in educating residential water users rely on a number of means of communicating their message. Chief among these are media announcements (47%), information supplements with water bills (42%), and other assorted publications and public information packages (29%). Other notable measures include voluntary low flow / retrofit programs (18%), community and special events, public displays and exhibits (14%), workshops and seminars (11%), as well as outdoor advertising, public opinion surveys, citizen

committees/task forces, eco-education programs, focus groups and the Internet. In addition, local governments have spread the water use efficiency message via toilet leak detection tablet distribution programs (Capital Regional District), water line insulation programs (Village of Port Clements), water wise gardening programs (CRD), rain barrel programs (Corporation of Delta), logos, speakers' packages, and bike patrol programs (City of Kamloops). The B.C. Power Smart program has also been promoted in many communities, such as the Village of Chase.

B.3(ii) Educational and Information Sharing (Commercial / Industrial) Initiatives

Information with billing (22%) and announcements via various media sources (20%) were identified as the most popular means of educating the commercial/industrial community. Other devices for educating this sector included publications, workshops and seminars, and user committees and task forces. In addition, the Village of Keremeos has undertaken door to door canvassing and the District of Port Hardy has offered water audits to commercial users.

B.3(iii) Educational and Information Sharing (School Programs) Initiatives

School programs initiatives were identified by respondents reporting the use of conservation measures, including: curriculum programs (20%), class tours of water facilities (16%), publications (10%), poster, writing and other contests for students (10%). Other initiatives include field trips to demonstration gardens, plays (Cities of Kamloops, Vancouver), publications, CD-ROM game (Greater Vancouver Regional District), and special water related school activities.

4. Lead by Example Initiatives

Water use efficiency is an area in which government offices and water utilities may "put their money where their mouth is" by leading by example. To this end, 32% of respondents having adopted water conservation measures are engaged in water efficient landscaping, including: xeriscaping, water efficient irrigation, operations and maintenance, and climate comfort systems for landscaped areas. In addition, 27% and 23% respectively practice early detection/early repair of leaks and water efficient operations. Low flow/retrofit programs (16%) and employee education programs (16%) are also well represented, although education for elected officials lags somewhat behind at 10%. Conservation libraries and reduced water pressure in government buildings were also identified (9% and 6%, respectively).

5. Partnerships and Cooperation Initiatives

Partnerships and cooperation initiatives include the involvement of the three levels of government with the British Columbia Water and Waste Association (BCWWA), BC Hydro, and

various interest groups on such committees as the BCWWA Water Use Efficiency Committee. Respondents also reported inter-governmental partnerships (12%) partnerships with (other) utilities (13%), government - industry partnerships (5%) and partnerships with major users (8%). For example, the City of Kamloops reported cooperation with major users including the School District, University College of the Cariboo and the local hospital. Respondents also reported pilot projects involving partnerships / cooperation (2%). The City of Vernon identified the involvement of Environmental Youth Team members to review commercial and industrial accounts and conduct water audits and the City of White Rock cited involvement with the B.C. Small Water Systems Committee, BCWWA and the B.C. Safety Council. Other examples of cooperative endeavours include landscape related activities with landscape/irrigation experts, tourism related activities, cooperative associations with special interest groups and partnerships with science/educational enterprises.

The **Water Use Efficiency Catalogue** has been written as a companion piece to the Water Conservation Strategy for British Columbia. The Catalogue lists each measure and type with the various governments in British Columbia which reported employing the initiative. Where the information was provided, the catalogue draws on the experience of water providers by noting important experience with each measure including Keys to Success, Costs, Actual and Potential Water Savings, as well as other descriptive information relating to water saving initiatives. It is hoped the Catalogue will promote cooperation and information sharing, and a proactive approach to water conservation.