

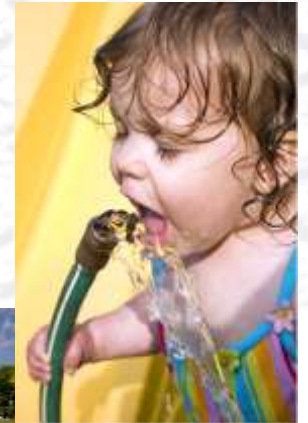
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Presentation Overview

1. Demand Management Drivers
2. Community Water Consumption
3. Some Current Issues in DM
4. Provincial Government Role

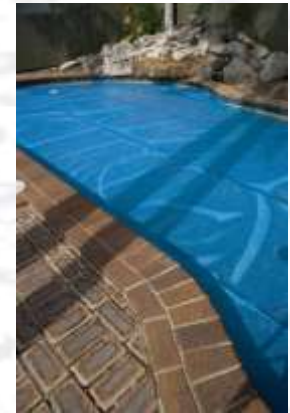


Behavioural



Indoor

Outdoor



Technological

Demand Management in the Cowichan Valley

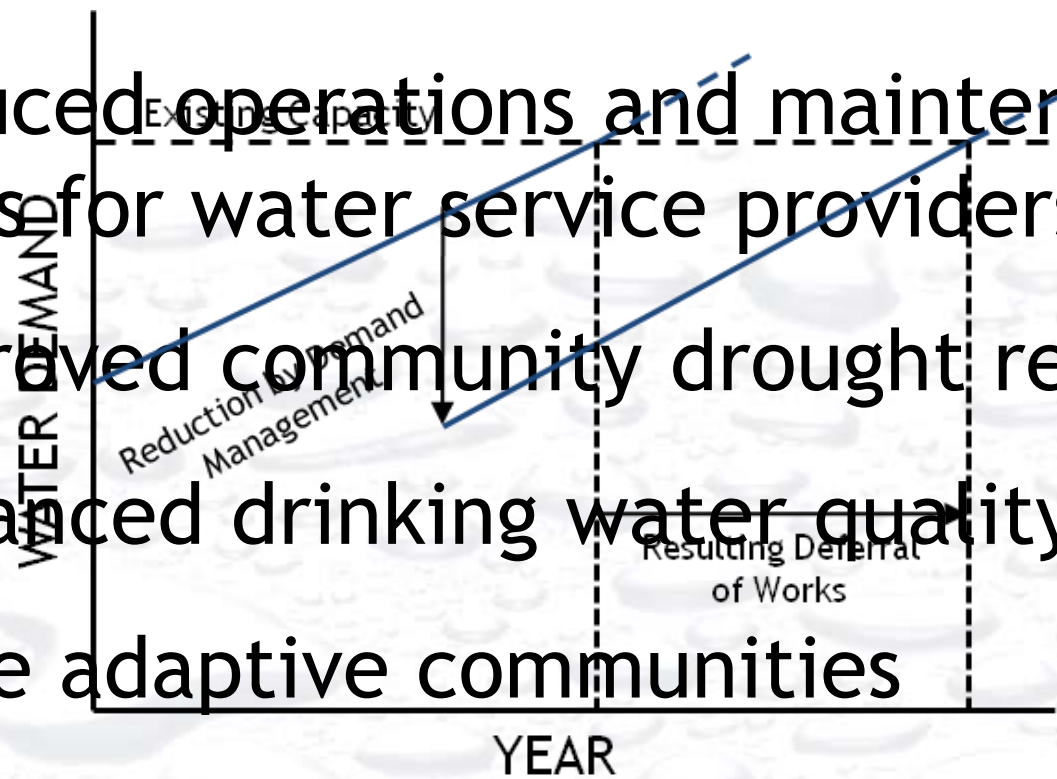
- ◆ CB WMP completed in 2007
 - ◆ Vision: *The Cowichan Basin community conserves and manages water to ensure reliable supplies for human use, thriving ecosystems, and a healthy economy*
 - ◆ 27 of 89 actions involve maximizing efficiency of water use (about 1/3)
- ◆ Some activity already underway
 - ◆ Toilet rebate programs, (mostly) common watering restrictions, educational material...
 - ◆ Building blocks for program expansion

Ecological Reasons for Demand Management

- ◆ Enhanced environmental flows for streams, fish and aquatic ecosystems
- ◆ Reduced impacts from bulk infrastructure construction
- ◆ Healthier aquifers and groundwater
- ◆ Reduced sewage disposal to environment
- ◆ Reduced energy use and GHG emissions

Community Reasons for Demand Management

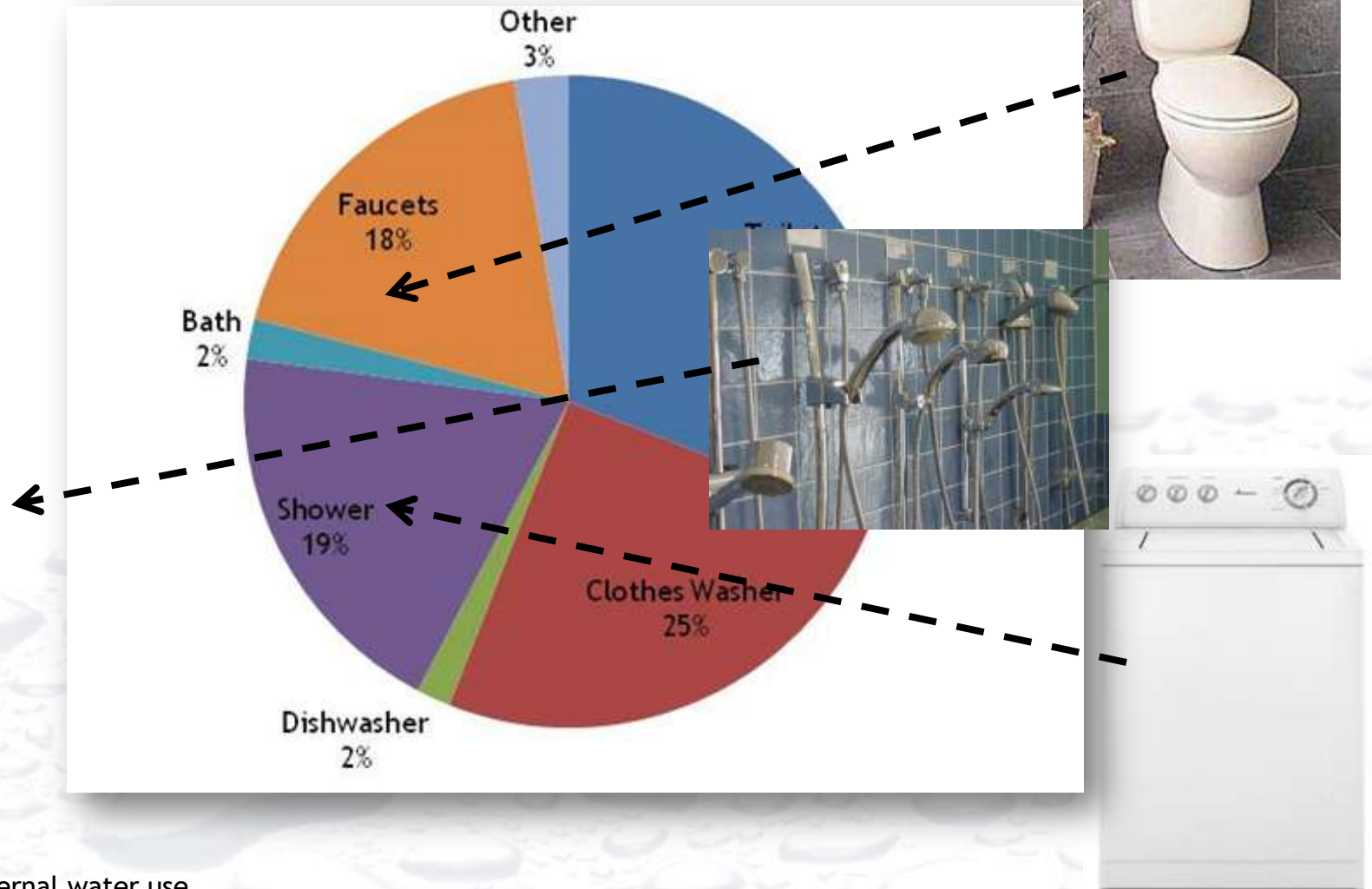
- deferred infrastructure investment
- reduced operations and maintenance costs for water service providers
- improved community drought resiliency
- enhanced drinking water quality
- more adaptive communities



Community Water Demand

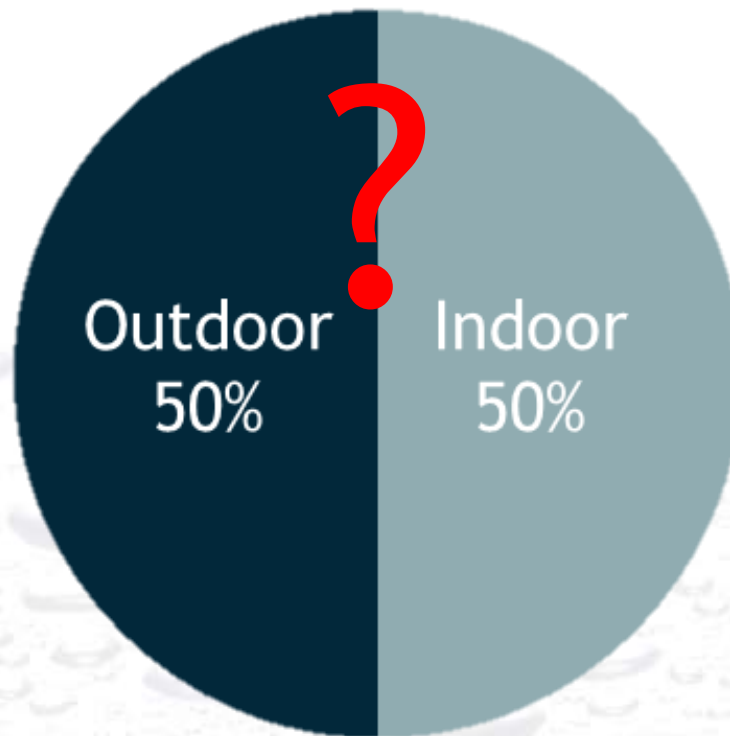


How Water Is Used Inside a Typical Stand-Alone Home



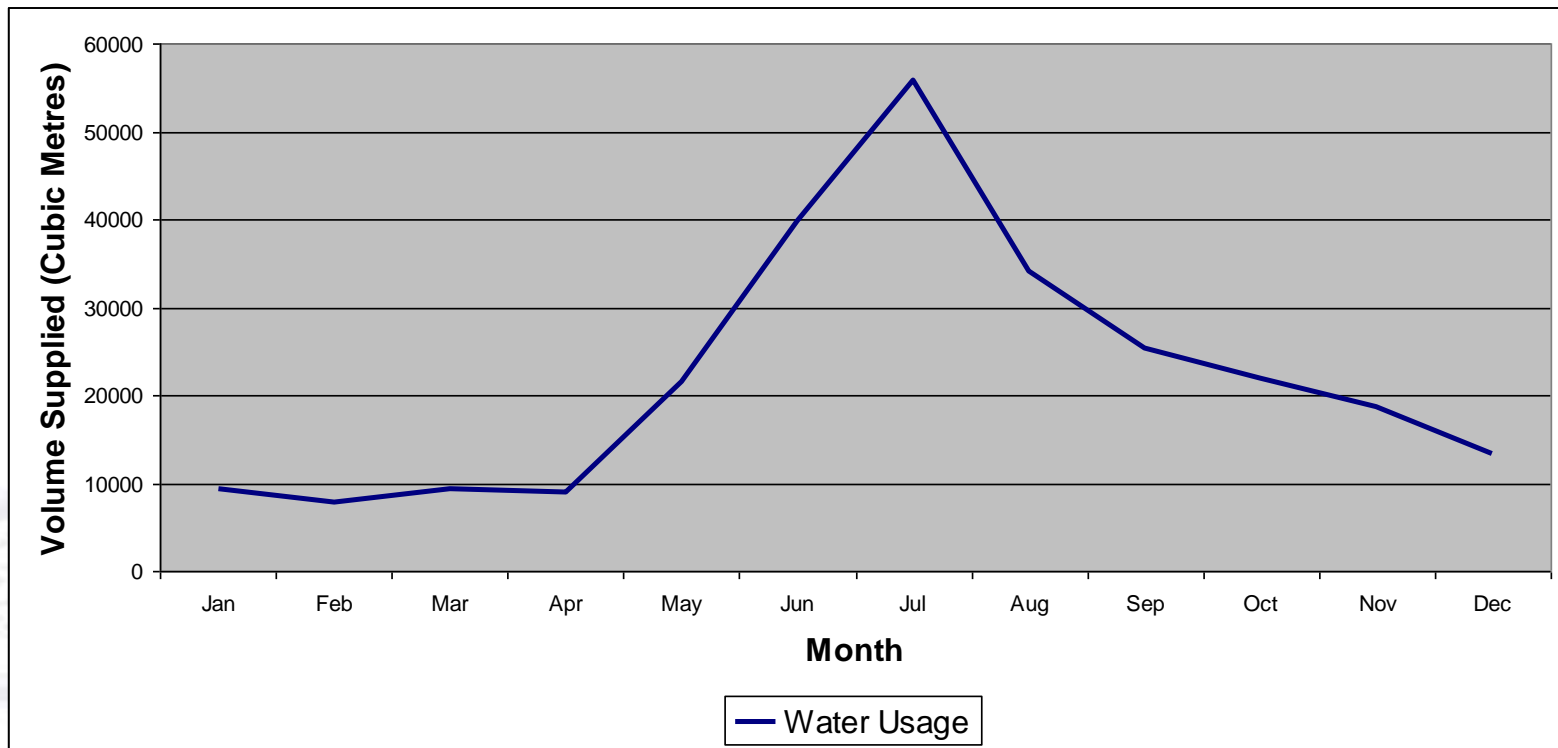
Note: excludes external water use.
Source: based on Mayer et al (1999).

Indoor/Outdoor Water Use Split



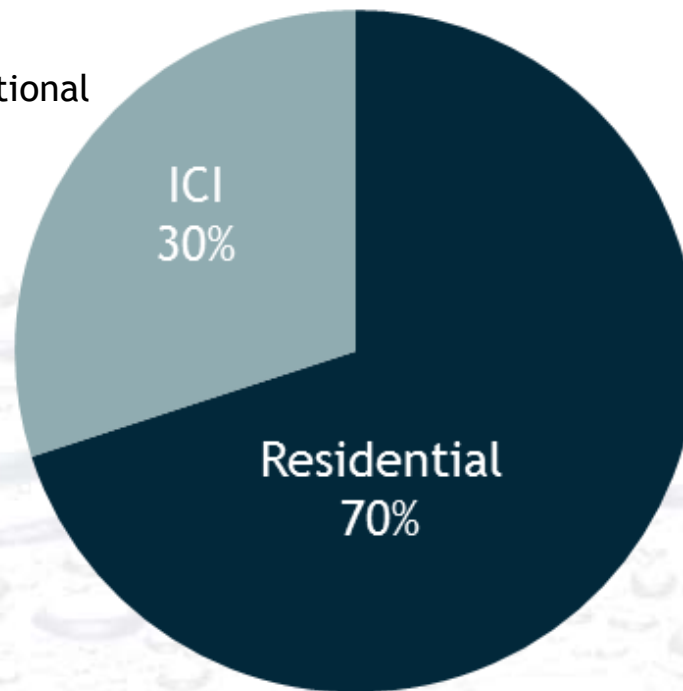
Indoor/Outdoor Water Use Split

Overall Monthly Water Use in Shawnigan Lake North (2009)



Water Use By Sector (CRD)

ICI = Industrial/Commercial/Institutional



Residential Water Use

Comparison of Average Daily Residential Flow

Location	Water Use (Litres/Person/Day)
Canada - Overall average (2006)	328
British Columbia Average (2006)	448
Shawnigan Lake North, CVRD (2009)	412
South East Queensland, Australia	<200

Some Issues in Demand Management

- Metering and Pricing
- Technology Change
- Marketing Clutter: Education and Marketing Challenges

Metering

- ◆ A beneficial general management practice
- ◆ Allows service providers to better account for water use and measure performance
- ◆ Allows greater control of unaccounted for water
- ◆ Sometimes controversial and usually expensive (initially)
- ◆ Communities that install meters usually experience an immediate and sustained reduction in water demand

Metered vs. Unmetered Water Use

Comparison of Average Daily Residential Flow

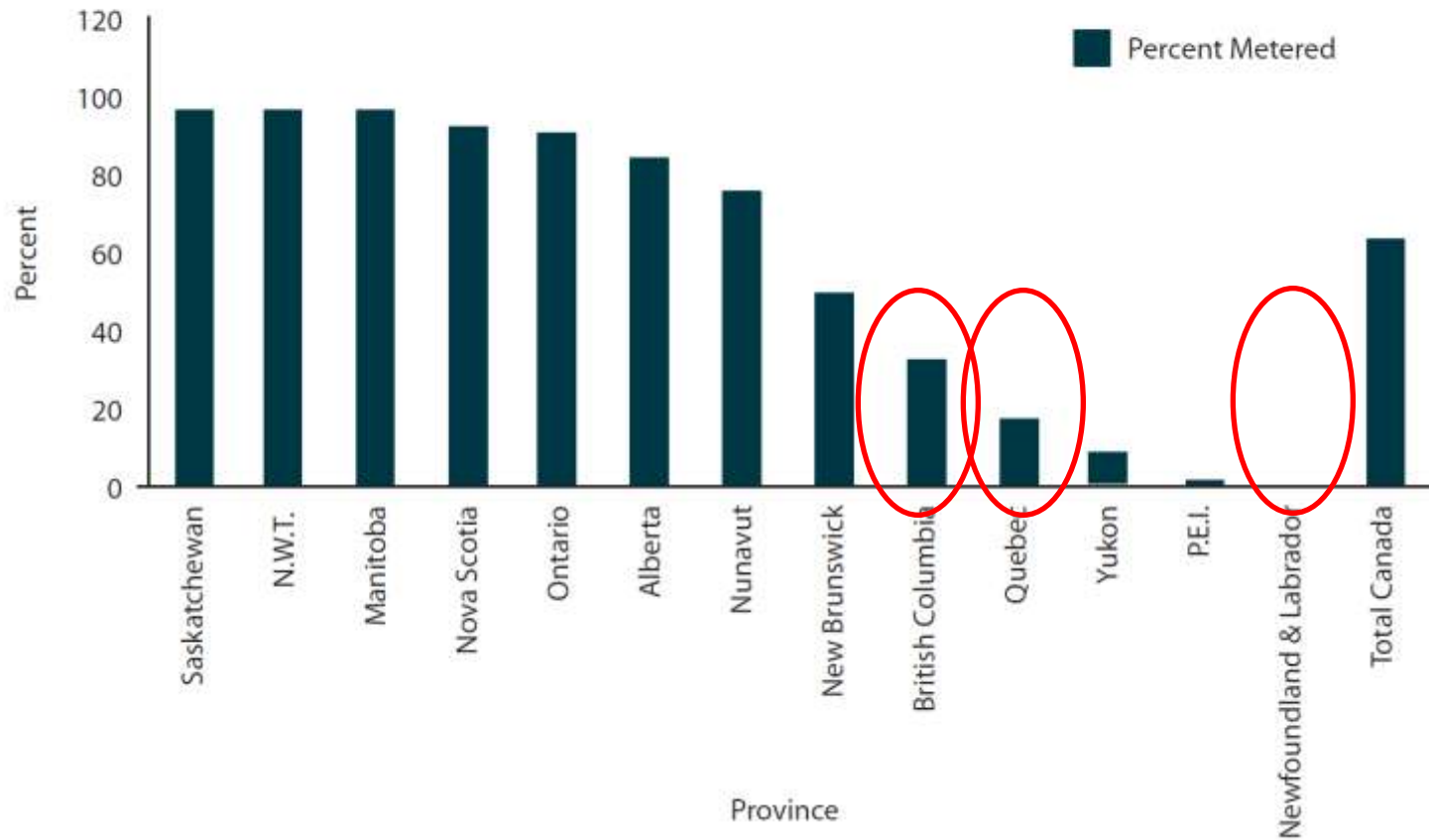
Location	Water Use (Litres/Person/Day)
Canada - Average for municipalities without meters and “flat rate” pricing (2004)	467
Canada - Average for fully metered municipalities with “volumetric” pricing (2004)	266

How Canada Fares: Metering

As of 2006, 63.1% of residential customers were metered...



Percent of Canadian Single Family Dwellings That Are Metered (2006)



How Canada Fares: Volume Based Charging



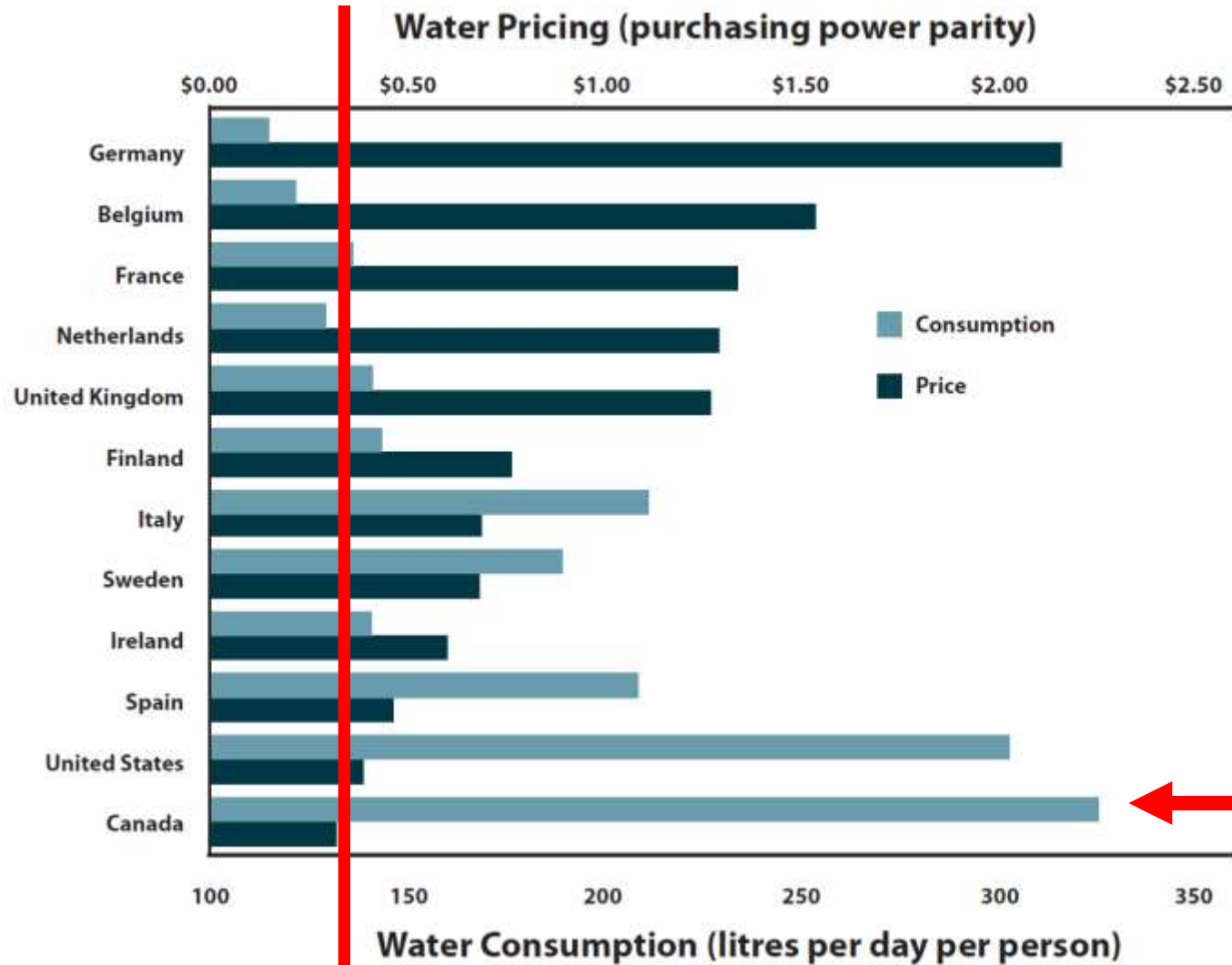
As of 2004, 29.9% of Canadian residents are still billed on a flat rate or tax assessment basis.

And, again, there is considerable province-to-province variability.

Metering in the Cowichan Basin

- As of 2005, approximately 4325 (45%) of 9,644 connections in the Cowichan Basin were metered
- Most of these are charged on a volume based rate structure.
- The remainder were charged on a flat rate (Westland, 2006).





Technology Change

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Better Information for Consumers



Natural Replacement Rates Are Important...

Device	Estimated Lifespan
Toilet	Life of home (but effectively 20 years)
Showerhead	20 years
Faucets	15 to 20 years
Washing Machine	10 to 15 years
Dishwasher	9 to 15 years
Rainwater Tank	20 years?

Education and Marketing Challenges



Marketing Clutter

How many marketing messages is the average consumer exposed to in 1 day?



Scoop & Pour Cat Food

XXXXXXXXXX

100 CATS
Scoop Away
Fresh Scoop

Multi-Cat
Cat Fresh

100 CATS
Scoop Away
Fresh Scoop

100 CATS
Scoop Away
Fresh Scoop

100 CATS
Scoop Away
Fresh Scoop

100 CATS
Scoop Away
Fresh Scoop

Deli-Cat
Deli-Cat
Deli-Cat
Deli-Cat

100 CATS
Scoop Away
Fresh Scoop

Marketing Clutter

The average American consumer is exposed to
~3000 marketing messages per day.*

Each of us sees more ads alone in one year than
people of 50 years ago saw in an entire lifetime.

Marketing Clutter

“Consumers are like roaches. You spray them and spray them, and after a while it doesn’t work anymore.”

- Naomi Klein



WATER STEWARDSHIP INFORMATION SERIES



B.C.'s Ground Water Protection Regulation



What Private Well Owners Should Know

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Most Customers Don't Really Need More “Education”

- ◆ Studies show that education alone has little or no effect upon sustainable behaviour
- ◆ There is often little or no relationship between attitudes and behaviour
- ◆ Few people elect to retrofit their homes in response to economic appeals alone
- ◆ Large scale information campaigns to foster sustainable behaviour often achieve negligible measured results

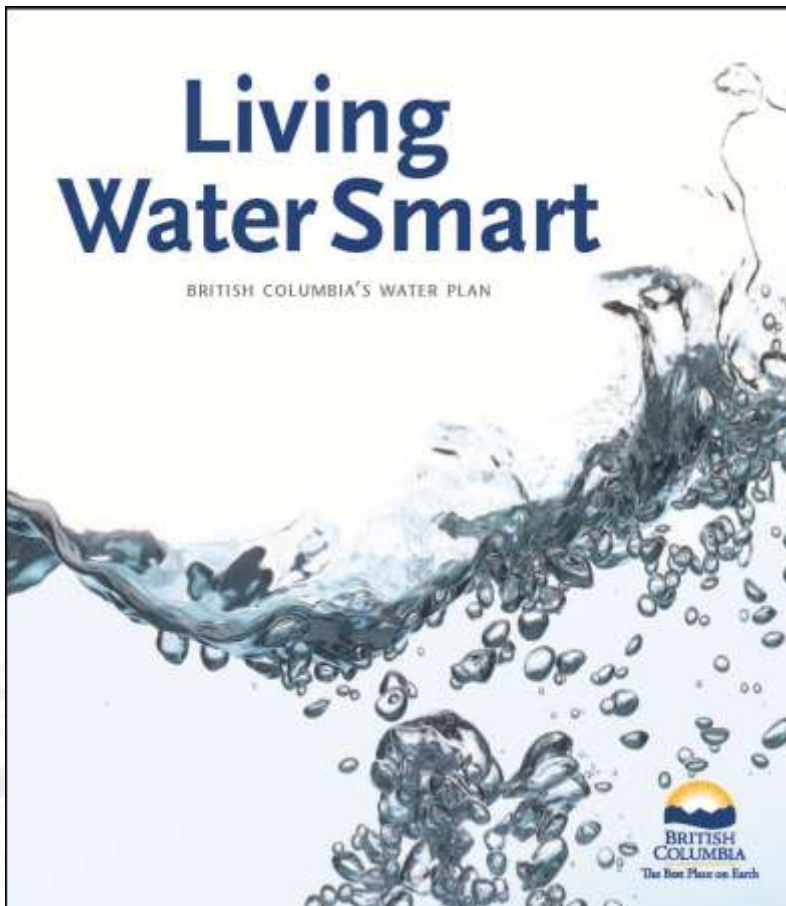
Explanations for People not Engaging in an Activity

- 1) They do not know about it or its benefits
- 2) They perceive that there are significant barriers associated with engaging in it
- 3) They perceive that they benefit more from continuing to engage in present behaviours

Provincial Government Role



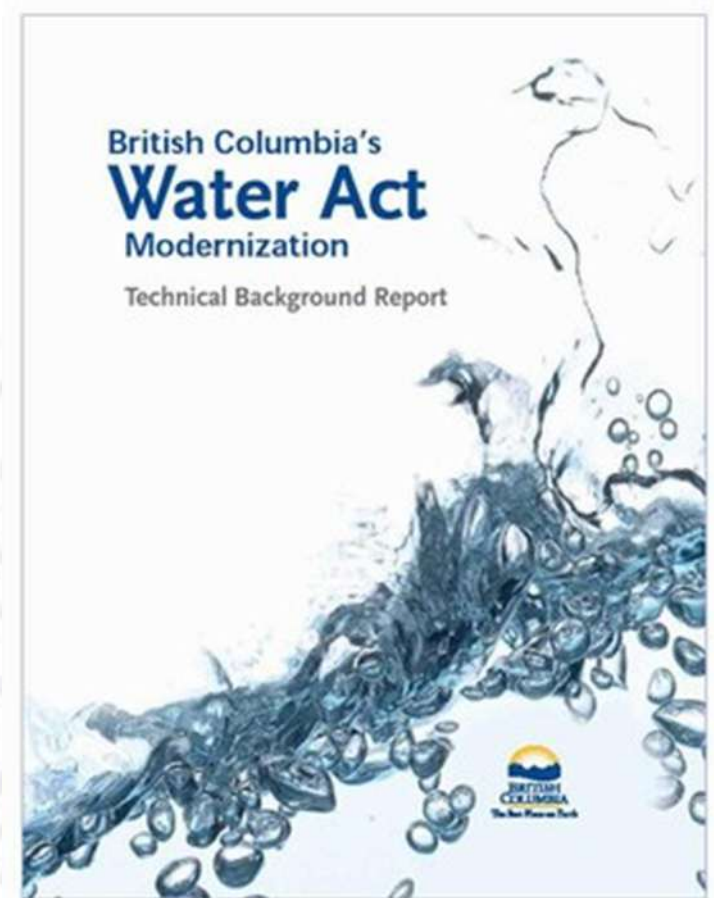
The Provincial Government Role

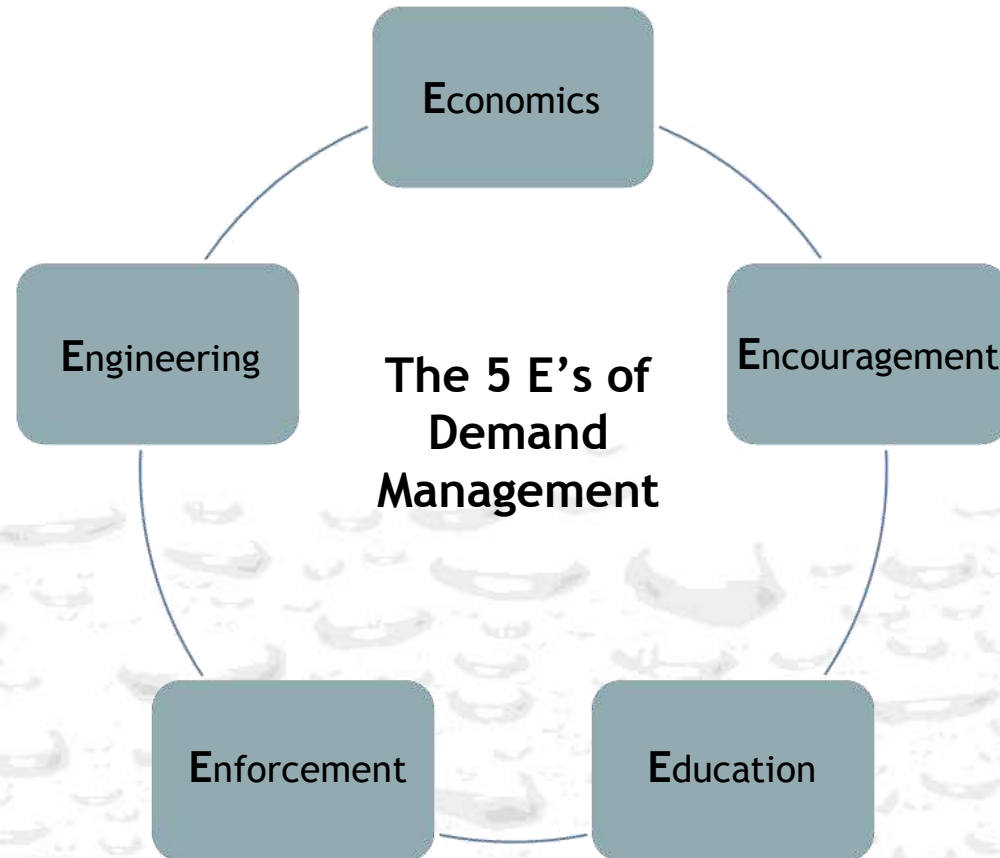


**Living Water Smart
(2008)**

The Provincial Government Role

British Columbia Water Act Modernization





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Water Conservation Measures Recommended in the Cowichan Basin Watershed Management Plan

Goal 1. Maximize efficiency of water use.

Objective 1a. Initiate improvements to water infrastructure.

- 1a-1. Minimize leaks in major water distribution systems by developing and implementing a comprehensive **leak detection and system maintenance** program.
- 1a-2. Install **water meters** on new water connections and retrofit existing connections.
- 1a-5. Provide **incentives** (e.g., tax credits, rebates) for replacement of existing plumbing fixtures with water efficient technology.

Objective 1b. Improve management of water demand in all sectors.

- 1b-1. Create a consistent **volume-based pricing structure** throughout the Basin, and request that the Ministry of Environment apply similar mechanisms.
- 1b-2. Implement a **conservation-based sewer charge** (i.e., link sewage treatment costs to water consumption).
- 1b-3. Implement a comprehensive demand management program in the Cowichan Basin that includes the following measures:
 - 1b-3a. Ensure that residents, businesses, and industry employ water conservation measures (e.g., xeriscaping, water audits).
 - 1b-3b. Promote the use of **rainwater harvesting** techniques (e.g., rain barrels, cisterns, dugouts, retention ponds) and greywater reuse.
 - 1b-3c. **Educate** residents, business, industry, and decision makers about demand management.
 - 1b-3d. Promote **efficient agricultural water use** techniques, such as drip irrigation instead of spray irrigation.
- 1b-4. Conduct independent **water audits of Catalyst Paper's Crofton mill** to investigate opportunities to enhance existing conservation measures.

Water Conservation Measures Recommended in the Cowichan Basin Watershed Management Plan

Goal 1. Maximize efficiency of water use.

Objective 1c. Ensure local governments and institutions are leaders in water conservation.

- 1c-1. Incorporate comprehensive water conservation strategies in **Official Community Plans** and other land use and development plans and policies.
- 1c-2. Ensure that **local governments lead by example** by using water conservation measures, such as xeriscaping and low-flow fixtures, to decrease water use by municipal and institutional operations.
- 1c-3. Develop and implement 'green building' policies (e.g., using LEED standards) that include water conservation and water reuse in the **construction and retrofitting of public buildings** and facilities.
- 1c-4. Adopt a program of regular water use efficiency **audits for publicly-owned buildings** and infrastructure.

Objective 1d. Promote land use that increases water use efficiency.

- 1d-1. Prepare and **amend land use and community plans** to promote land uses and development patterns that maximize water efficiency and protect Cowichan Basin water resources.
- 1d-2. **Revise municipal and regional policies, regulations, and land use plans** to include Low Impact Development and Smart Growth design principles.
- 1d-3. Develop and implement '**green building**' policies (e.g., using LEED standards) that include water conservation and water reuse. Begin with institutional and commercial buildings (Action 1c-3) and eventually include all building types.

Additional Measures That Are the Responsibility of the Provincial Government or Already Implemented

Goal 1. Maximize efficiency of water use.

Objective 1a. Initiate improvements to water infrastructure.

1a-3. Ensure **provincial and federal grants for infrastructure** are contingent on water metering.

1a-4. Work with the Ministry of Environment to require **metering** of water used under existing and future surface water licences and water extracted from existing and future wells.

{Contemplated under the BC Government's Water Act Modernization process}

1a-6. Install water-saving plumbing fixtures (e.g., shower heads, toilets, faucets) in all **new construction**.

{Essentially implemented through recent BC Building Code changes (effective October 2011)}

Objective 1b. Improve management of water demand in all sectors.

1b-5. Request that the Ministry of Environment Water Stewardship Division implement the following actions:

1b-5a. Adopt legislation requiring the **licensing of wells** and the reporting of volumes used.

1b-5b. For new or amended **water licences**, attach **terms and conditions** that require water conservation and reporting of volumes used.

1b-5c. Amend provincial legislation and guidelines governing water licences to allow **licences** to be issued for **instream conservation** without requiring diversion, works, or human use.

1b-5d. Seek opportunities to **cancel unused consumptive water licences** and do not re-allocate these volumes to other licensees.

1b-5e. **Reserve unrecorded water** in streams for the use of the Crown, for the purpose of conservation and downstream supply.

{Some items under 1b-5 are contemplated under the BC Government's Water Act Modernization process}