

Greenest City Vancouver
Submission to the Water Working Group by the POLIS Project on Ecological Governance
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What does a sustainable water community look like? What *could* it look like in BC? Although many communities across the province use some degree of demand management, it is typically employed only as a secondary or temporary option until additional supplies are secured. A 2008 Statistics Canada report¹ attests to this short-sightedness: while more than two-thirds (69%) of Canadian households used some sort of water conservation practices in 2006, as of 2008, Canada still had the second highest per capita water consumption in the world (after the United States).

Clearly something isn't working with our current approach to water conservation. To be effective, urban water management must integrate conservation measures with comprehensive, long-term demand management strategies. This means thinking about water infrastructure as something more than pipes, pumps and reservoirs. This "new" infrastructure includes innovative conservation-oriented physical components, water sensitive urban design and conservation programs that complement existing water supply networks. In seeking to inspire future leaders to implement this new way of thinking, *Greenest City BC* represents the potential of urban water management and infrastructure planning in Canada.

I. Overall Water Use Goal: "No New Water for a Generation"

Adopting a vision of "No New Water Supplies for a Generation" until all practical water conservation and efficiency has been achieved inspires a paradigm shift towards water conservation without using an absolute or percentage reduction target that may be difficult to quantify. It means we stop the search for new supplies until maximum practical conservation and efficiency is achieved. We commit to finding the water we need through the abundant supply of "new water" that is being flushed down the drain. If we can find the funds to expand supply, we can certainly find the funds to conserve.

An overarching water conservation target sends a clear signal to the public that water conservation and efficiency are essential to continued economic and ecological health. Naturally, there are challenges associated with setting overarching targets, especially in the absence of solid baseline information on existing water use and the potential for water savings in each sector (residential, institutional, commercial and industrial). Yet in spite of these challenges, a target provides incentive for change and a benchmark with which to gauge progress.

Aiming for water neutrality will mean mandating the highest level of water efficient fixtures and appliances in all new construction, use of alternative sources of water (e.g., rainwater capture) for toilet flushing and landscape management, the use of off-site recycled water where available, conservation-based pricing for the residential and ICI sectors, and an aggressive programme that targets reductions in residential and municipal outdoor water use.

¹ EnviroStats 2008. Statistics Canada.



Who's Already Doing It?

- *Calgary, AB* – Calgary's "30-in-30 by 2030" target is aimed at accommodating Calgary's future population growth with the same amount of water removed from the Bow River in 2003. The City's Water Efficiency Plan takes into account residential, commercial, municipal and industrial water use.
- *Okotoks, AB* – Okotoks is one of the first municipalities in the world to establish population growth limits linked to infrastructure development and the environmental carrying capacity of its water source (the Sheep River)
- *Abbotsford/Mission, BC* – Considering "No New Water Supplies for a Generation" beginning 2010
- *Guelph, ON* – Guelph is aiming for a 20% (10,600 m³/day) water reduction by 2025 with an explicit goal to "use less water per capita than any comparable Canadian City"
- *Los Angeles, CA* – Released an aggressive water conservation plan in July 2008 that targets 100% of new demand for water will be met through water conservation and water recycling by 2030, with 50% of all new demand being filled by recycled water by 2019 and the other 50% being met through additional conservation

II. Recommendations

i) Implement 100% Residential and ICI Metering

Metering water use is one of the most important best management practices for encouraging water conservation by fostering greater awareness and **accountability for water use** and is essential for the adoption of any volume-based pricing structure. The City of Calgary has observed through local studies that "metered customers use 60 per cent less water on average than customers on a flat rate because they are more conscious of where and how water is used."² A similar trend has been noted nationally. Without metering, it is impossible to understand how much water is being used and where the opportunities for savings lie.

Specific Actions

- Require meters in all new construction of homes, businesses and industry in Vancouver through a universal metering programme (including requiring sub-metering for multi-residential buildings)
- Retrofit existing homes, businesses and industry with meters by 2020

Who's Already Doing It?

- For Canadian cities with populations over 500,000 the average rate of metered residential customers is 73%. The national average rate of metered residential customers metered is 63% (MWWS, 2006)

ii) Implement Full-Cost and Volume-Based Pricing

Water rates fail to reflect environmental costs, and in many cases do not even reflect the

² CBC News (2009). City fast tracks mandatory meter conversion. Accessed at: <http://www.cbc.ca/canada/calgary/story/2009/03/25/cgy-calgary-water-meters.html>



full financial cost of providing water services. Full cost water rates should extend to protecting the source, replacing aging infrastructure at a reasonable rate, water conservation planning and programming, education, research, and treatment of wastewater as opposed to a narrow focus on water treatment infrastructure. Canadians paying flat rates use 74% more water than those under volume-based structures.

Specific Actions

- Implement separate volume-based pricing schemes for residences and businesses
- Display amount used and paid and savings on each water bill

Who's Already Doing It?

- The *CRD* has implemented full-cost pricing meaning that customers pay the entire cost of the water they use, including capital and maintenance costs
- *South East Kelowna Irrigation District* reduced agricultural water allotments by 27% over a five-year period through an increasing-block pricing system
- *City of Calgary* has a good layout for displaying water consumption and payment information on residential water bills

iii) Require Minimum Water Efficiency Standards

Municipalities spend millions of dollars per year on rebate programs that would no longer be necessary if water-wasting fixtures (such as 13L toilets, top-loading clothes washers, inefficient pre-rinse spray valves) were no longer available for purchase. The US Energy Policy Act sets minimum water efficiency standards for both new construction and all point of sale transactions. Mandating best available efficient fixtures in all new construction that meet or exceed existing international standards through bylaws and updating specifications regularly is much more cost effective than conducting retrofits later, and ensures all new demands for water are the most efficient possible.

Specific Actions

- Mandate WaterSense-approved fixtures and water efficient landscapes in all new construction
- Extend standards beyond new construction to manufacturers and point of sale transactions (i.e. ban water inefficient fixtures such as 13 L toilets)
- Mandate plumbing rough-ins that enable future water collection and use of alternative sources for toilet flushing and lawn watering (purple pipes) as will be mandated in according to *Living Water Smart* by 2010
- Create extensive fixture and appliance retrofit rebate and installation programme for all residences

Who's Already Doing It?

- The "Target 140" programme in Australia saw residents of Southeast Queensland reduce their per capita water use from 295 lpd to 140 lpd through a series of restrictions, education and rebate programmes. The programme attributes the largest reduction in residential water use to an extensive home visit programme that saw staff going to each home and replacing all fixtures with high efficiency fixtures

iv) Create a Water Demand Management Team



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Hiring permanent staff with technical skills and understanding in diverse fields as psychology, economics, and education ensures appropriate oversight with respect to the implementation of the water conservation and efficiency strategy and its progress against conservation targets. Responsibilities of the team can include measuring, tracking and reporting on the performance of the strategy and establishing and implementing water conservation and efficiency measures.

Specific Actions

- Create a Water Demand Management team within the City of Vancouver
- Hire six full-time staff positions, including residential, ICI and outreach positions and 6 seasonal (summer) positions

Who's Already Doing It?

- CRD has a comprehensive DSM team with 5.5 FTE as of 2009 and 4 summer students plus 1 winter co-op student every year with an annual operating budget in 2008 of \$1.5 million (including salaries)
- For 2009 the *City of Guelph* has 3 FTE and 4 PTE (seasonal) with a budget of \$825,000. This will increase to 6 FTE and 4 PTE (seasonal) with 1 PTE (ongoing co-op student) and an annual budget of \$2-million beginning in 2010

v) “Go Golden” Campaign to Reduce Outdoor Water Use

In most communities, outdoor water use is the primary factor contributing to peak demand. For this reason, outdoor summer demand during the summer should be one of the main targets of Vancouver’s water conservation programme.

Specific Actions

- Implement a full suite of bylaws, including restricting lawn size or banning lawns altogether in new construction, drought-tolerant landscaping requirements, one-day-per-week watering restrictions, cutting off extreme customers after due warning, and conservation-based water rates that penalize heavy users (including municipal users)
- Switch all irrigation for parks and boulevards to non-potable water
- Launch a public education and outreach campaign that includes residential landscape water audits and home visits
- Incentives and rebates programme for homeowners for rain barrels and rain gauges, hose timers and automatic irrigation systems

Who's Already Doing It?

- *York, Guelph, Waterloo* all implement bans during drought conditions
- *City of Kelowna* found that residential landscape water audits, where City staff visited homeowners and conducted irrigation system, landscape and soil assessments was key to reducing outdoor water use.
- *Vernon, BC* limits lawn coverage to 30% of property
- *City of Calgary* found that its Parks Department accounted for 15 -17% of all irrigation in Calgary. The fact that these are highly visible places meant that improving Parks’ irrigation practices was partially about addressing a public



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perception issue. The City set a target of reducing municipal irrigation by 15% through a number of measures including a centralized irrigation system (the largest in North America) as well as irrigating “only when necessary” and banning irrigation on boulevards, medians, traffic; using drought-tolerant plants and xeriscaping; having developers submit irrigation master plans early on and having only IA certified designers submit plans and install irrigation systems that will be turned over to the City

III. Looking to the Future

i) Rainwater and Waste(d) Water as the Source

In some countries, rainwater collected from roofs or other impermeable surfaces is a viable source of water for outdoor irrigation, and for many indoor uses such as laundry washing or toilet flushing. Yet in Canadian cities, with average precipitation ranging from about 260 to 250 millimeters per year, rainwater harvesting is vastly underused, resulting in missed opportunities to save 40% to 50% of the water currently used around the home.

Specific Actions

- Designers, builders and the GVRD building inspector should work to make clients aware of the cost-effectiveness of designing for some degree of rainwater catchment
- Develop practical guidelines and specifications to assist homeowners in the proper installation of rainwater, greywater and black water collection systems and the installation of composting toilets
- Implement extensive rebate and installation programmes to enable uptake of onsite rainwater catchment and greywater reuse for homeowners

Who's Already Doing It?

- *Guelph, ON* is piloting rainwater harvesting cisterns and reuse
- *Pimpama Coomera* housing development in Southeast Queensland (2500 homes, growing by 120 homes/month) has a Class A+ Recycled Water Treatment Plant that supplies toilets & outdoor water use. Each home also has mandatory rainwater tanks used for laundry cold water & outdoor use

ii) Plan for Sustainability Through “Wet Growth”

Land use decisions determine water use and watershed health now and in the future, and many patterns of development are problematic. Standard subdivision design is a classic example of how urban sprawl inevitably leads to more and bigger water pipes. This type of land use decision – often divorced from water use considerations – has negative impacts that may not be evident until years later. All land use decisions should be assessed for watershed impacts.

Specific Actions

- Establish minimum lot sizes i.e. an area-by-area approach to the hydrology in order to establish reasonable local limits
- Require developers to prove sustainable water supply with new developments. This solution requires the implementation of building code modifications that address quantity



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- Approve construction in a manner that ensures avoiding negative impact on the supply and quality of potable water: require a permit and a development plan for all construction that states how potential problems related to water supply and quality will be handled.



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