



Transitioning the New Construction Sector to Water-Sensitive Design

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December 2012

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Special thanks to Patrick Gilbride for conducting research and preliminary writing to support this work.

Preface

This paper is intended as a resource for water, planning, and building practitioners and was inspired by two research reports: *Building Towards Water Efficiency: Policy Innovation and Education in New and Existing Homes* (Wolfe and Hendriks, 2010) and *Peeling Back the Pavement: A Blueprint for Reinventing Rainwater Management in Canada's Communities* (Porter-Bopp et al., 2011). This work builds on prior research by summarizing labelling and certification programs and policies for encouraging water efficiency and low-impact development practices in new and redeveloped buildings. Although more comprehensive and in-depth reviews of green building programs exist (Clean Air Partnership, 2007; City of Seattle, 2008), this paper offers a summary of how water-related measures are incorporated into green building programs in Canada.

Section 2 provides an overview of water-sensitive design elements in the most prominent voluntary certification and labelling programs in Ontario. This is followed by a review of current policies devised to encourage green building practices and/or water-sensitive design in the new construction sector in Section 3. Section 4 looks beyond policies to propose two potentially missing ingredients to a successful transformation of this sector: social marketing, and understanding and responding to customers. Technical appendices offer additional details about water measures and certification requirements of each labelling program (Appendix A) and the range of policy options most prevalent in North America today based on a jurisdictional scan (Appendix B).

The paper does not explicitly distinguish between residential, commercial, industrial, or redevelopment building sectors in terms of recommendations or program review. The intention is to provide a high-level overview of the potential for improvements to water management within the new construction sector and does not aim to offer prescriptive recommendations.

1 Introduction

The Downside of Growth

Ontario's population is projected to increase by 33 per cent over the next 25 years (Ontario, 2012). Much of this growth will be in urban areas in the Greater Golden Horseshoe area, in areas designated by the *Places to Grow Act* (Ontario Ministry of Infrastructure, 2012). If built with conventional techniques, new homes and redevelopment constructed to accommodate this growth has the potential to both negatively impact the natural environment and place strain on overextended infrastructure.

For example, the residential sector alone uses approximately one-quarter of all water withdrawals in Ontario (excluding the power sector) for buildings and landscapes (Maas, 2010). Increased water withdrawals to supply more toilets, taps, and thirsty landscapes can trigger a need for costly new water and wastewater treatment plants. Rainwater in conventional developments is typically not collected to meet water needs within the home, but instead collects as runoff that must be addressed through expensive stormwater collection and treatment measures. All water used within buildings is then piped as wasted water kilometres away from where it is generated, treated using centralized, energy-intensive processes, and then discharged into a river or lake often in volumes akin to a man-made river. Collectively, these constructed interactions between water and the built environment no longer make ecological or economic sense (Porter-Bopp et al., 2011).

Economic Opportunity

In the last decade, much research has been dedicated to reducing the impact of newly constructed buildings on energy use and greenhouse gas emissions. Accordingly, much progress has been made in reducing the environmental footprint of new homes. But only a handful of such studies have explored the untapped potential for water efficiency in new homes, despite the implications for water resources and infrastructure (Veritec, 2008; Wolfe & Hendriks, 2010; Leslie, 2012).

At the same time, communities in Ontario have spent millions of dollars on rebate programs in an effort to replace outdated and inefficient “distributed” water infrastructure—the toilets, taps, and industrial process equipment that, to a large extent, dictate the volume of water used. Given the low marginal cost to upgrade fixtures such as toilets, taps, and clothes washers to efficient models when building new homes, it makes good economic sense to build new homes and businesses as efficiently as possible.

Building efficiently also makes long-term economic sense for the homeowner. Estimates of the increased costs to buy green range from three to five per cent over a conventionally built home. Although the upfront costs can reportedly limit affordability for buyers, the U.S. Green Building Council suggests that the return on investment makes long-term economic sense.

An upfront investment of 2% in green building design, on average, results in life cycle savings of 20% of the total construction costs – more than ten times the initial investment. Additionally, building sale prices for energy efficient buildings are as much as 10% higher per square foot than conventional buildings. (U.S. Green Building Council, 2012)

Furthermore, the monthly savings in utility costs are reported to offset the increased mortgage costs (Traber, 2009).

Encouraging “Blue” Building

Encouraged by the suite of benefits, communities in North America are increasingly adopting programs to shift new housing developments toward more sustainable designs. Municipal green building incentive programs can take a variety of shapes and forms, from offering homeowner financial incentives, to improving the ease of the approval process.

Although green building has historically been associated with energy reduction initiatives, a review of certification requirements in popular voluntary labelling programs revealed that water efficiency measures are increasingly robust. In fact, building professionals have suggested that water efficiency elements such as toilets, taps, and showerheads are some of the simplest elements of green building programs to incorporate (York, 2011; Terhove, 2012). While water efficiency programs have traditionally focused on retrofits of fixtures, the opportunity to reduce future water demand through green building programs can no longer be ignored, particularly in regions of rapid growth.

This paper offers the first comprehensive review of how techniques—ranging from water efficient fixtures and landscapes, to onsite collection, infiltration and controlled release of rainwater—are making their way into green building labelling and incentive programs in Ontario. This collection of techniques, when applied in a comprehensive plan, is referred to as water-sensitive urban design (WSUD). WSUD attempts to ensure “that urban water management is sensitive to natural hydrological and ecological cycles. It integrates urban planning with the management, protection, and conservation of the urban water cycle” (National Water Commission of Australia, 2012). WSUD may also be referred to as “low-impact development” or “green infrastructure,” however in this paper water efficiency and recycling are also considered important aspects of WSUD. To distinguish the comprehensive urban planning process that is WSUD from building features that are sensitive to natural hydrological cycles, the latter will simply be referred to as “water-sensitive design” throughout the paper.

Throughout this discussion, green building programs and policies will be referenced; an implicit assumption is that water efficiency requirements are also included in these programs, however in practice policy-makers should take care to ensure that the programs selected have sufficient impact on water, wastewater, and/or stormwater to meet the particular needs of the municipality.

2 Water-Sensitive Design in Voluntary Labelling and Certification Programs for Homes

Although there are literally dozens of green building rating and labelling systems in Canada few have taken significant hold in the Ontario marketplace. A key element in encouraging the widespread adoption of efficient technologies is their endorsement by an arm’s length agency with a reputable and recognizable brand. EnerGuide Canada, the U.S. Green Building Council’s LEED, and the United States Environmental Protection Agency’s ENERGY STAR are examples of how an industry recognized label can influence consumer behaviour. As of 2011, one in five homes achieved the ENERGY STAR label in Ontario (Morris, 2011). Canada adopted the ENERGY STAR label in 2001, illustrating that the potential for transformation of the market for new homes in just a decade can be significant. Although an important success story for energy, the ENERGY STAR label alone will not suffice to address Ontario’s water wasting practices in the new construction sector.

As the trend towards mandating efficiency through provincial building codes and the requirements of local governments becomes increasingly common, the benefits of voluntary labelling programs become more evident. The development of buildings labelled with nationally recognized certification systems such as ENERGY STAR and LEED paved the way for future regulatory requirements. For example, the Ontario Building Code (OBC) has recently required that new homes achieve an EnerGuide rating of 80, meaning “that homes built after 2011 will have a 35 per cent increase in energy efficiency compared to homes built before 2006” and will closely approximate the ENERGY STAR requirements (Ministry of Municipal Affairs and Housing, 2010). In this way, green labelling and certification programs can not only pull the market towards efficiency, but also create the platform for the market push that follows from regulations. Importantly, voluntary green labelling programs are continually upgrading their specification to stay ahead of the building code curve; they establish a culture of continuous improvement within the green building movement.

A jurisdictional scan revealed that there is not a one-size-fits-all certification or labelling program to meet every community’s needs. Instead there is a role for a variety of green building certification systems and labels. Below, a review of the voluntary labels for new homes most relevant to water in Ontario is provided, including an overview of their water-sensitive design requirements (more detailed specifications for water requirements are included in Appendix A). The water-sensitive design components of each program are summarized in Table 1.

LEED

The LEED Green Building Rating Systems are voluntary, consensus-based, and market-driven. Based on existing and proven technology, they evaluate environmental performance from a whole building perspective over a building’s life cycle, providing a definitive standard for what constitutes a green building in design, construction, and operation. (Canada Green Building Council, 2009)

LEED awards points towards certification in five environmental categories:

- Sustainable Sites;
- Water Efficiency;
- Energy and Atmosphere;
- Materials and Resources; and
- Indoor Environmental Quality.

There are numerous classifications for certification, including single and multi-family homes; commercial, institutional, and industrial buildings; existing buildings; and neighbourhoods. In addition, here are four levels of building certification, ranging from Certified to Platinum. LEED has strong brand recognition in Canada and there has been an increase in new construction seeking these designations. LEED requires certification by an independent third party.

Prevalence in Ontario: As of 2011, there were 345 LEED certified buildings in Canada (larger than 600 m²), 134 of which are located in Ontario (Canada Green Building Council, 2011). The majority of certified buildings are commercial, institutional, and multi-family buildings. There are more than 2,600 projects registered with LEED across Canada (pending certification).

Water: Although LEED has traditionally been more focused on energy reduction, the certification program has a mandatory 20 per cent reduction in water use compared to the building baseline, which is currently equivalent to the Ontario Building Code, and awards up to 12 additional points (out of the minimum 40 for basic certification) for projects that employ water-sensitive design and architecture elements.

Built Green

BuiltGreen was developed by builders in Alberta specifically for the single-family homes market. The EnerGuide Rating System (ERS) is an integral part of the program.

BuiltGreen includes both energy- and water-efficiency elements that are eligible for points towards a Silver, Gold, or Platinum rating. Over 150 environmentally friendly action items are included in six categories:

- Envelope and Energy Systems;
- Materials and Methods;
- Indoor Air Quality;
- Ventilation;
- Waste Management;
- Water Conservation; and
- Business Practice.

The benefits are reported to include national brand recognition and a system that is simpler to implement and certify than LEED (Paulsen, 2011). There is no requirement for third party certification in the BuiltGreen program. Members (builders) complete the checklist and register the home through an online database.

Prevalence in Ontario: Although BuiltGreen has penetrated the market to a significant extent in western Canada, the labelling program is just emerging in Ontario.

Water: A minimum of 10 points in the water category are required for certification (out of a possible 90) and measures range from water-efficient toilets to greywater systems and rainwater cisterns.

WaterSense

WaterSense is the sister brand of the successful ENERGY STAR label initiated by the Environmental Protection Agency (EPA) in the United States. Environment Canada became a WaterSense partner in 2011, and the Province of Ontario became a partner in 2012. Water efficiency experts across Canada agree that embarking on a WaterSense marketing campaign is necessary to build brand recognition in Canada and would be most logically delivered at the senior government level (Environment Canada, 2010). For example, the EPA markets WaterSense extensively, including launching the We're for Water campaign in 2012 that resulted in a series of public service announcements.

WaterSense certifies and labels both fixtures (e.g. toilets, showerheads, faucets) and, more recently, new single-family homes. Effective January 1, 2013, this certification will be extended to residential units in multi-family buildings. The certification for new homes offers a nation-wide, legally enforceable standard for new homes, while also providing municipal partners and builders with access to well-designed marketing materials. The WaterSense for Homes specification includes things like leak testing, performance verification, hot water transfer time restrictions, and landscape requirements that cannot be achieved with product standards alone.

Prevalence in Ontario: WaterSense labelled fixtures can now be found at most hardware stores in Ontario, with WaterSense retail partners such as Home Depot prominently displaying their WaterSense-labelled toilets. Local governments can become WaterSense promotional partners offering them access to a variety of ready-made marketing tools at no cost; yet, the vast majority of Ontario communities have yet to do so. The WaterSense label for homes specification, however, has not been extended to Canada by the EPA and there are currently no plans to do so.

Water: Products and homes certified with the WaterSense label use 20 per cent less water than the current federal standard without sacrificing the performance of water using fixtures. For example, toilets are certified to flush 300 grams of media (soy paste simulating fecal matter) with a single flush; meaning WaterSense toilets may outperform toilets that use more water per flush.

The Living Building Challenge

The Living Building Challenge (LBC) is a program developed by the International Living Future Institute and currently offered in the United States, Canada, and Ireland. It represents arguably the most advanced definition of sustainability and WSUD.

The Living Building Challenge envisions a future whereby all buildings, infrastructure, and communities are configured based on the carrying capacity of the site: harvesting sufficient water to meet the needs of a given population while respecting the natural hydrology of the land, the water needs of the ecosystem it inhabits, and those of its neighbors. (International Living Building Institute, 2012)

To achieve LBC certification buildings must tackle seven performance areas or “petals” ranging from Water and Energy to Equity and Beauty (see Appendix A for full list). Each petal is comprised of a list of imperatives or actions. There are four different typologies or scales at which the certification can apply, including neighbourhood, building, infrastructure, and renovation. All imperatives (actions) assigned to a given typology are mandatory. A building must be monitored by a third-party for 12 months to secure the certification.

Prevalence in Ontario: In Canada, this program has been operated by the Canadian Green Building Council since 2009. As of yet, there are only 60 projects in process in all of North America; the Living Buildings Institute was only recently founded in 2009.

Water: The LBC’s Water petal includes two imperatives: Net Zero Water and Ecological Water Flow. To meet Net Zero Water, 100 per cent of occupants’ water use must come from captured precipitation or closed-loop water systems that account for downstream ecosystem impacts and that are appropriately purified without the use of chemicals. To meet Ecological Water Flow, 100 per cent of stormwater and building water discharge must be managed onsite to feed the project’s internal water demands or released onto adjacent sites for management through acceptable natural time-scale surface flow, groundwater recharge, agricultural use, or adjacent building needs. Both water imperatives are prerequisites for all buildings certified as LBC with the exception of the Renovation typology, for which the Ecological Water Flow imperative is not required.

Customized, Community-Specific Programs

York’s Sustainable Home Incentive Program and Toronto’s Green Standard are examples of regionally or locally customized green building programs. These programs are community-specific, which enables the prioritization of measures that meet the community’s environmental and infrastructure needs. Another example is the City of Guelph’s comprehensive Blue Built Home

certification and labelling program, designed with water efficiency as the core metric. Rebates are offered for installation of water efficient appliances and fixtures (Bronze certification), while additional points and rebates can be acquired for inclusion of greywater (Silver certification) or rainwater harvesting systems (Gold certification). This program may be available for use as a template for other communities. Despite the benefits of a customized program, builders that work across multiple jurisdictions may experience additional administrative burden. These programs may also suffer from a lack of public awareness and require more extensive marketing efforts. The complexity of certification and implementation are highly dependent on the structure of the program.

Prevalence in Ontario: Several communities in Ontario have customized green home labelling programs, however each program is only applicable within the bounds of that community or region. After only one year of offering the label, three builders are already offering Guelph's Blue Built Home as a voluntary upgrade to their clients. The first Blue Built Home community is currently underway, with 26 Bronze homes Bronze and one Silver home (Yates, 2011).

Water: York and Guelph's programs emphasize measures that reduce water demand whereas Toronto's program focuses on stormwater control measures (see Appendix A).

Summary

Table 1 summarizes the minimum requirements for water-sensitive design elements of each certification and labelling program. A full list of required and optional measures for additional credit/points for each program is provided in Appendix A. The programs are also evaluated for their inclusion of alternative sources of water (e.g. rainwater, greywater) for use within the building, stormwater mitigation techniques, or requirements and specifications to achieve a performing topsoil layer.¹

¹ Landscapes with appropriate topsoil depth and quality are an often-overlooked feature of green homes. A performing topsoil layer is essential to both the health of plantings (reduces watering needs) and infiltration (reduces runoff) (Young and Morrison, 2012; Green Infrastructure Partnership, 2010).

Table 1: Summary of Water Requirements in Voluntary Certification Program

Program	Building Type				Minimum Requirements for Water ¹	Optional		
	Single Fam.	Multi-Fam.	Non Res. Build.	Neighbourhood		Alternative Sources for Indoor Use ²	Stormwater Measures	Performing Topsoil Layer
LEED	✓	✓	✓	✓	20% reduction in water use from 2012 Ontario Building Code	✓	✓	
Built Green	✓				10 points out of 90 (for Bronze) e.g. 10 points = 3 toilets, washing machine, and all faucets	✓	✓	
Living Building Challenge	✓	✓	✓	✓	Net zero water; Zero stormwater discharge	✓	✓	
Blue Built Home (Guelph)	✓				All Bronze water measures mandatory (includes efficient fixtures, appliances, hot water recirculation)	✓		
WaterSense Home	✓	pending			Approximately 20% reduction in water use from 2012 Ontario Building Code (includes efficient fixtures, appliances, hot water recirculation, leaks, pressure, landscape)			
York's SHIP Program	✓				All water measures mandatory (includes fixtures, appliances, smart meters, hot water recirculation)	✓	✓	✓
Sustainable Dev. Through LEED (York)		✓			Indoor and outdoor water use reductions through LEED rating system	✓	✓	
Toronto Green Standard		✓			Stormwater management, water efficient plants for 50% of landscaping, tree planting		✓	

¹ Minimum requirements only. Many programs achieve additional points/credits for WSUD measures that exceed the minimum.

² Alternative sources includes rainwater, greywater, and wastewater reuse.

3 Encouraging Green Building in Ontario

Municipalities across Ontario were contacted to evaluate their experiences to date with green building incentive programs. Program managers revealed a variety of program formats, but generally slow uptake by home builders in these future-looking programs—particularly at the level of single-family housing. Many programs are still in their infancy; however, the low rates of participation suggest the need for program adaptation. Interviewees suggested that uptake of what are otherwise progressive programs may be limited by programs of limited duration (e.g. less than 3 years), requirements for intensive certification processes, and/or incentive levels too low to entice builders.

3.1 The Carrot (Incentives)

Despite offering financial incentives ranging from direct cash rebates, to reduced development charges, to increased servicing allocation, builders in Ontario have been reticent to take part in municipal green building incentive programs across the province. For example, York Region offers servicing credits in exchange for building to the specifications outlined in its Sustainable Housing Incentive Program to municipalities who then deliver community-specific programs to builders (York Region, 2009). Early discussions with Greater Toronto's Building Industry and Land Development (BILD) association suggest the right mix of incentives may still not be in place. Certification processes continue to be perceived as onerous and a nationally recognized standard may be preferred over a customized program (York Region, 2011).

A little farther west, the City of Kitchener partnered with the local non-profit Community Renewable Energy Waterloo (CREW) to offer the Kitchener Green Housing Incentive (KGHI) program to local builders who build to the LEED standard. It consisted of rebates ranging from \$1,000 to \$5,000 per home depending on the level of certification achieved. Builders were notified of the grant each time they applied for a building permit and a marketing campaign was executed, including workshops with builders, billboards, radio advertisements, and brochures targeting both builders and homeowners (Schipper, 2012). However, builders were not consistently providing information about the incentive programs to homebuyers, partly because the program was only designed to endure for a three-year period, which is short compared to typical 10- to 15-year development plans. This meant that builders would not be able to offer the program over the entirety of their development projects, which made it administratively annoying for them. Builders in the area expressed that they would have preferred a permanent program, which they could use across their entire development, rather than a limited and temporary one (Satnik, 2012).

Despite the lack of participation in the KGHI program, several production builders in the Region of Waterloo now build all homes to the ENERGY STAR standard, suggesting a willingness to innovate if the certification program makes sense to builders and is perceived to offer a market advantage.

Box I: Profile of Two Successful North American Green Building Incentive Programs

The City of Calgary offered a Building Permit Rebate Program for both the residential and the commercial, institutional, and industrial (CI&I) sectors. The BuiltGreen voluntary standard was accepted for residential (single-family and semi-detached) new construction and both BuiltGreen and LEED were acceptable certification for the CI&I sector. Tiered rebates were offered on building permit fees: 10 per cent rebate for Bronze certified BuiltGreen or LEED certified; 20 per cent for BuiltGreen or LEED Silver; and 30 per cent for BuiltGreen or LEED Gold or Platinum. At the program peak, Calgary had just shy of one-third of *all* new built homes participating. Though the program was initially successful, it ended on July 31, 2010 after a number of years with no new builders entering the program (Terhove, 2012). Similar programs have been developed in Strathcona County, Alberta; Edmonton, Alberta; and Saanich, British Columbia.

The City of Chicago's Green Permit Program has grown exponentially since it was initiated in 2005. Eligible projects can expect a review process that is roughly half (30 days or less) of that for projects applying for standard permits. All applicants to the program are assigned to a dedicated staff member. This single point of contact not only serves to significantly speed up the approval process but also ensures rigid compliance with program requirements. To be eligible, commercial, institutional, and industrial buildings, as well as residential projects over 10 units must achieve LEED certification. Residential projects less than 10 units must meet the Chicago Green Homes Program (a customized standard based on LEED) (City of Chicago, 2012). In addition to the requirements for LEED or Chicago Green Homes certification, additional items are required to receive a partial permit fee waiver. The menu items include green roofs and exceptional water management, among other options. "In 2007, the program processed more than 200 projects, representing more than 1,000,000 square feet of new development and existing building retrofits" (City of Seattle, 2008).

A reduction in development charges or an expedited approvals process may be a more effective incentive because it is embedded in the building approvals process and would be perceived as a long-term incentive. The Town of Caledon in Peel Region, Ontario has one such program. Caledon's Green Development Program for industrial and commercial buildings includes a rate reduction of 5 per cent to 10 per cent of development charges for innovative stormwater practices, rainwater harvesting cisterns and other energy saving technologies and a reduction of 20 per cent to 45 per cent for LEED certified buildings. However, despite the long-term nature and the absence of a requirement to certify buildings (both desirable program features for flexibility), to date this program has also received only minimal uptake.

It is unclear why program uptake remains limited in Ontario, but this should not imply these programs are not worthwhile. Both Calgary and Chicago have realized great success through incentive programs (see Box I). Communities in Ontario that have created green building programs are considered innovators; and now an opportunity exists to work together to revise these programs to encourage greater adoption within the building community (refer to Maas and Wolfe, 2012 for specific recommendations).

3.2 The Stick (Mandated Requirements)

A number of rapidly growing communities, many of which are located in York Region, have opted to go beyond voluntary incentives to instead mandate efficiency. For example, in 2006 the Town of East Gwillimbury implemented a policy that requires all new commercial, industrial, institutional, and high-rise residential buildings to meet LEED Silver standards. Concerns around mandating efficiency often centre around the risk of driving development to a neighbouring community.

However, East Gwillimbury's General Manager, Development and Legal Services, Don Sinclair suggests this fear is unfounded. "No one has said to me, 'We're not going to build in East Gwillimbury because of your LEED policy,'" Sinclair reports. "They are looking for sites that are appropriate for what their needs are. I haven't had anyone slam plans down and say, 'I'm going to Aurora'" (Carss, 2007).

The City of Markham, Ontario has taken York Region's Sustainable Development Through LEED Program, an incentive-based program that offers servicing credits for high-density buildings that meet LEED standards, and mandated it for all new high-density development. This policy allows Markham to secure higher levels of water servicing credits from York, which in turn enables the community to achieve higher densities and accommodate a larger population. The program remains in its infancy but is considered largely successful, and has resulted in downtown Markham having North America's largest development of LEED certified buildings (Downtown Markham, 2012).

Other examples of mandating green building in the Greater Toronto Area include the City of Vaughan, which requires all new homes to meet ENERGY STAR, and Toronto's Green Standard that stipulates minimum standards for stormwater overflow. The Town of Newmarket took a different approach, using the sale of a municipal property as an opportunity to establish an example of greening a subdivision. The town attached a condition of sale:

that these lots have homes that use at least 25 per cent less fresh water, have 60 per cent less discharge into the storm and sanitary sewers, produce 60 per cent less greenhouse gas, and use 60 per cent less energy compared to conventional homes. Rodeo Fine Homes won the bid and plans to exceed all of the targets, even doubling the water conservation target. (York Region, 2007)

4 Moving from Policy to Adoption

To date, the Ontario experience with green building incentive programs suggests that policy alone is not necessarily enough to ignite a market transformation in the building industry toward water efficiency. Informal discussions with realtors and new development sales offices suggest that homeowners remain primarily concerned with esthetic features (e.g. granite counter tops) and the environmental footprint of homes remains of little concern to the majority of new homebuyers.

4.1 Social Marketing

Targeted social marketing campaigns may, therefore, be one avenue to increase the desirability of a green home and water-sensitive features to homebuyers and the willingness of home builders to participate in green building incentive programs. Social marketing is a form of marketing aimed at changing behaviour for social good or progress. Some creative social marketing campaigns are emerging in North America and beyond. Successful campaigns attempting to change water-related social norms include:

- The Wasting Water is Weird campaign, a partnership of Bosch, Kohler, LOWES, and Proctor and Gamble that generated a series of public service announcements that are being shared through social networking outlets (e.g. Facebook).
- Brazil's Pee in the Shower campaign, a humorous endeavour to encourage residents to flush less.

- The City of Denver, Colorado’s innovative ad campaign that encouraged residents to “Use Only What You Need” to reduce lawn watering
- The Region of Peel, Ontario’s outdoor water efficiency program involving consultations for homeowners interested in “Fusion Landscaping.” This approach to marketing water-efficient landscapes was based on an innovative social marketing survey that identified key attributes of desirable landscapes.
- Green Communities Canada’s RAIN program, aimed at changing homeowner behaviour to reduce stormwater impacts.

A more targeted role for social marketing may be to improve the participation of builders and homebuyers in incentive-based programs and to increase their desire to have a home built to green, water-efficient standards. To date, well-researched marketing programs targeting water use in the new construction sector are essentially non-existent. Entrenched beliefs about the efficacy of water efficient fixtures such as showerheads remain a barrier to promotion of these technologies by builders; and awareness of labelling programs such as WaterSense remains limited.

York’s discussion with the BILD community on the barriers to uptake of its Sustainable Housing Incentive Program revealed,

... homebuyers want to know what is in it for them. Real numbers are needed to market and promote these programs... all stakeholders need to collaborate in the education, communication and marketing to demonstrate to homebuyers/owners the importance of low impact development strategies. For example, if you purchase a green home, your water savings will be the equivalent of getting free cable for one year. (York Region, 2011)

This feedback from the building community suggests a need for a coordinated approach to marketing. Researching and designing an effective social marketing campaign can be a significant undertaking; however, opportunities to partner with other municipalities, utilities, environmental organizations, and private enterprises can aid in providing cost effective solutions. Collaboration between Ontario municipalities with an interest in incenting green housing could lead to the development of new ways of marketing labelling programs, incentive programs and/or water efficiency to homebuyers and builders.

4.2 Understanding and Responding to Customers

Establishing a level of trust through effective communication with water customers is helpful both for effective program design and for increasing customer participation. Moving toward 21st-century solutions to water infrastructure will involve new practices and policies; homeowners and citizens are unlikely to support these changes without trust in their local water utility, particularly in the case of mandated policies. Diane Dupont, Department of Economics, Brock University reports that only 50 per cent of Ontarians trust their community water supplier to manage risks associated with using centralized reclaimed water for toilet flushing (Dupont, 2011). This lack of trust may represent a roadblock to adoption of water-sensitive design elements and also participation in municipal incentive programs.

Ontario municipalities are responding to this challenge with new ideas for building community trust and developing a recognizable brand. For example, The Municipal Tap Water Providers in the Grand River watershed (the Region of Waterloo, the City of Kitchener, Kitchener Utilities division, the City of Waterloo, the City of Cambridge, and the City of Guelph) are “working together to increase awareness and appreciation for ... high quality tap water” through initiatives such as the water wagon that provides tap water to community events and a one-stop web hub that describes

where water comes from and key information on water efficiency (Municipal Tap Water Providers, 2012).

Having intimate knowledge of customer preferences and perceptions is also critically important to successful program design and adaptation over time. Box II outlines the approach that Marin Municipal Water District in California has taken to developing and nurturing their relationship with customers. Taking the initiative to engage with and understand customers will enable better design of policies intended to improve water-sensitive design in the new construction sector.

Box II: Marin Municipal Water District Focuses on Building Customer Trust

Dan Carney, Marin Municipal Water District's (MMWD) Water Conservation Manager in California has recognized a need for rigorous policy to reduce water use within the district and has adopted some of the most progressive water-efficiency measures in the world. Carney suggests that policy alone is not sufficient, and is best coupled with programs that support customers in embracing policy change through outreach programs and incentives. MMWD has a diverse suite of policies and programs to ensure water-sensitive design in homes and businesses, including requiring retrofit of inefficient fixtures when remodelling and water efficiency standards for new construction that go beyond state standards. These mandated measures are paired with rebate and education programs that aim to ensure implementation of the requirements and to maintain customer trust. Carney is continually looking for ways to adjust programs to better meet the needs of customers and believes that participating in everything from community events to conducting onsite landscaping water audits is critical to better understanding his customers. "Staying in tune with customer needs is key to creating an excellent level of service and building trust" says Carney (Carney, 2012).

5 Conclusion

Building new homes, businesses, and redevelopment projects to incorporate water and energy efficiency makes clear economic sense both for homeowners and governments. Going beyond efficiency to encourage water-sensitive design in new construction will help future proof today's communities for tomorrow's challenges. A variety of green and blue building labelling and certification systems are available in Canada and there a number of exemplary policies and programs exist to meet the needs of most communities. Water practitioners have an opportunity to collaborate with the green building movement to maximize the benefits to water infrastructure and ecology. Municipal building, planning, and water departments have much to gain by working together to transition this sector to water-sensitive design practices.

Key Resources

Alliance for Water Efficiency (2012). Green Building Guidelines and Standards. Accessed at:
http://www.allianceforwaterefficiency.org/Background_on_Green_Building_Specifications.aspx?terms=green+building

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