



**Durham Region's
Water Efficient
Demonstration
Community**

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Durham Region

- on the eastern border of Toronto along shores of Lake Ontario up to Lake Simcoe
- population is over 500,000
- covers area of 2,500 km.² or 970 mi.²
- cities include; Pickering, Ajax, Whitby, Oshawa, Uxbridge, Port Perry...
- 80% of homes have water and sewer services = 126,000 homes

Some Context

- The population of Durham is set to double over the next 20 years
- make the homes being built to accommodate this growth more efficient
- this will reduce the pressure on our water supply and treatment infrastructures
- growth will be more manageable and less costly

Partners

- Tribute Homes is the homebuilder
- Canada Mortgage and Housing Corporation (CMHC) financial and technical support
- Durham District School Board
- Guelph Turfgrass Institute
- Veritec Consulting water efficient experts
- others under negotiation

Origins of the Community

- Since 1996, 6 litre toilets are the plumbing code standard in Ontario
- homebuilders tend to buy the cheapest 6L.
- toilets use about 40% of indoor water
- began planning in November 2001 with the initial emphasis on improving the quality of 6L. Toilets
- scale is 300 - 500 homes

Indoor Improvements

- Will upgrade toilets to Dual 3/6L. Flush, 6L. Flapperless and 4.5L. Power Assist toilets
- upgraded Low Flow showerheads
- high efficiency dishwashers
- laundry washers which reduce water use by between 30 - 50 % and energy use by 70%

Flapperless 6 Litre/Flush



Caroma 3 & 6 Litre/Flush



Caroma



Indoors

- Toilets, showers and clothes washing accounts for about 95% of indoor water use
- clothes washers and showers require hot water
- making them more efficient saves energy and water
- other improvements under consideration

Outdoor Improvements

- Refine turf to include indigenous grasses
- increases root depth and drought tolerance
- reduces lawn watering
- summertime brings 50% increase in water use largely due to lawn watering
- size of municipal infrastructures defined by this summertime peak
- could defer infrastructure expansions

Outdoors

- Tribute provides ‘plant packages’ to all buyers
- switch to water efficient plants will improve plant health and reduce costs due to lower replacement rates
- to test cisterns to capture rainwater to use for lawn watering



Outdoors

- Hope to supplement the plants through a partnership with a garden centre
- use the plants to reduce storm water runoff
- use them where grass doesn't grow; eg. thin strip between two driveways
- create different turf/plant combinations depending on type of use; young family, retired couple...

Building Community

- Tribute strive to develop a sense of community
- initiate community meetings soon after the first families move in
- meetings will be a source of feedback and instruction; toilets, appliances, lawn care (watering, pesticide reduction...)
- source of ongoing consultation

Community

- Community design features include footpaths, central gardens on traffic islands and circles
- many trees planted around the neighbourhood and along lot lines to provide privacy without usual ‘partitioning’ affect of wood fencing
- Region to provide a ‘householder’s pkg. To each home

Landscaped Traffic Islands



Community Taking Shape



Typical Streetscape



Plant Package



Common Greenspace



Affordability

- This development is mostly starter homes
- homes are on 30' lots
- all the improvements in water and energy efficiency to be affordable in all new homes
- all indoor and outdoor improvements will undergo a cost/benefit analysis to determine their payback period

Quantifying Efficiency

- Will measure reductions in both energy and water use via data loggers & bill analysis
- will compare to adjacent 'standard' homes
- provides the builder, homeowner and municipalities with clear data on the initial cost and payback of each upgrade
- hope that some changes will be adopted as standard equipment by the builder



Bringing Water Efficiency to the Community

- At least one school is to be built in this neighbourhood
- propose to outfit the school with the same water efficiency improvements in and outdoors
- outdoor benefits are doubly important because students and teachers aren't there to maintain gardens in summer

Water Efficient School

- Indoor improvements being considered;
 - include 4L. Toilets (#1 water user)
 - waterless urinals
- outdoors; water efficient ornamental and teaching gardens, water efficient turfs on playing fields
- dialogue has already helped efficiencies at Board's other schools



Water Efficiency in School

- Water efficiency school programs being developed
- curricula and support materials being created with Halton, Waterloo & Toronto
- for the grades studying water (2 & 8)
- school initiatives will ‘normalize’ these new technologies and approaches for the students

Broader Contributors

- Program will benefit from input from a variety of experts;
 - GTA Working Group's *Independent Toilet Testing*, and Water Efficiency School curriculum
 - Toilet performance protocol being developed with Canadian Water and Wastewater Assoc. and Calif. Urban Water Conservation Council
 - Guelph Turfgrass Institute

Setting a New Standard

- In Durham, the average person uses 270 litres of water per day
- these new homes have the potential to reduce this number significantly
- expect most changes to prove cost beneficial
- project reduces the cost burden of new growth and teaches water efficiency



Raising the Bar

- We hope this is but the first iteration
- once the efficacy of these changes are proven, begin a second phase of more aggressive changes
- series of iterations, each moving beyond the last
- share these evolutions with other home builders