Case Study: Toronto WaterSaver Programs

Upper Canada College saves water and protects the environment

Summary

Upper Canada College (UCC) is an independent boys' school in midtown Toronto that has taken education to greener pastures with its Green School initiative. Since 2002, UCC has used the curriculum, school facilities and behavioural changes to teach students, faculty, parents and alumni about living in harmony with the natural ecosystem.

One of the projects stemming from the Green School initiative is the reduction of water use and energy resources. UCC is a large school, located on 38 hectares of land, with 1,100 students and 240 empolyees. UCC's approach to water savings was ambitious and the College pursued multiple paths to reduction. To ensure its success, UCC collaborated with the City of Toronto's WaterSaver Program.

As part of this program, UCC conducted a 60-day study to measure and document the school's water use. The College determined that it could potentially save 84,300 litres of water per day — that's enough water to serve 84 families daily.

Challenge

Some parts of the College that were built in the 1930s, well before the Green School initiative, showed an inefficient use of water and energy. One of UCC's challenges was to develop water-reducing solutions that would not interfere with the learning environment of the school. Water plays an important role at UCC and it is used in the:

- Arena
- Swimming pool
- Kitchen
- Boilers
- Bathrooms
- Cafeteria
- Irrigation system

Solution

UCC achieved water savings by modifying or replacing equipment and fixtures, and reaped enormous rewards for the environment. In the first year of its water-saving program, UCC reduced water use by 38,000 litres per day and received more than $10,000 in rebates from the Toronto WaterSaver Program. The rebates helped to offset the cost of installing water-saving fixtures and equipment. Additional savings to the College included lower water and utility bills.

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Water-saving measures with water-using equipment:	Cost	Rebate	Water and Cost Savings		Payback Period
			Litres per day of water	Annual cost savings	
Swimming pool makeup	$1,700	$2,884	11,535	$ 6,315	Instant
Conversion of water-cooled air-conditioning/freezer units to air-cooled units	$10,500	$2,246	8,984	$ 4,920	1.7 years
Water recovery from boiler pump	$1,400	$818	3,270	$ 1,790	4 months
Sub-total	$13,600	$5,948	23,789	$ 13,025	7 months
Retrofits in the kitchen and bathrooms					
28 water-efficient toilets	$7,000	$1,680	3,528	$1,930	2.8 years
Replaced five flush urinals with 11 waterless urinals	$5,500	$2,200	7,200	$3,942	10 months
Replaced three flush urinals with six conversion flushometers	$2,400	$600	3,500	$1,916	11 months
Pre-rinse spray nozzle	$ 100	$ 22	88	$ 48	1.6 years
Sub-total	$15,000	$4,502	14,316	$ 7,836	1.4 years
Total	$28,600	$10,450	38,105	$20,861	Less than 1 year

UCC adopted the following water-saving strategies:

Swimming pool water makeup

Due to the design of the original pool filter system, water would overflow from the weir and discharge directly into the drain. UCC discovered that this overflow from the pool's edge was wasting 16,000 litres of water a day. With a new and modern filter system, UCC could capture some of the water through the pool filter, treat it and send it back into the pool, saving $6,315 per year.

Conversion of water-cooled units to air-cooled units

Initially, the fridges and freezers in the kitchen, as well as the air-conditioning units, used once-through water-cooled systems. The appliances and air-conditioning units were converted to air-cooled units and now use no water.

Water recovery

Previously, water that was used to cool the boiler pump was discharged to the sewer. Now, the water-recovery system reuses it as boiler makeup water.

Retrofits

UCC replaced old water-guzzling toilets and urinals in the bathrooms with 28 new water-efficient toilets and eleven new waterless urinals. The College also replaced three flush tanks serving six urinals with six conversion flushometers. The bathroom retrofits saved over 14,200 litres of water per day. UCC also installed a water-efficient pre-rinse spray nozzle in the cafeteria, which will reduce water use in this area by another 88 litres per day.

For more information, call 416-392-7000 or e-mail savewater@toronto.ca