



STAFF REPORT ACTION REQUIRED

Water Efficiency Plan Update - 2011

Date:	January 11, 2011
To:	Budget Committee
From:	General Manager, Toronto Water
Wards:	All
Reference Number:	P:\2011\Cluster B\TW\bc11002

SUMMARY

The City's Water Efficiency Plan (WEP), approved by City Council in 2003, is aimed at creating "in-system capacity" by reducing water consumption across the City to service the population and employment growth which was projected to increase by 10 and 12 percent respectively, by 2011. This report summarizes the reductions achieved in water consumption to date and provides an overview of the trends observed.

Based on the reductions achieved, the change in market conditions, significant consumer awareness and the budgetary pressures facing Toronto Water, changes are proposed to the City's continued water efficiency and conservation efforts. These include continued public education and communication to further promote water conservation initiatives; support for the City's industrial and commercial business community to achieve efficiencies in water usage and reduce consumption; and implementation of a City-Wide Water Loss Reduction and Leak Detection Program in support of Toronto Water's infrastructure renewal programs.

RECOMMENDATIONS

The General Manager, Toronto Water recommends that:

1. Effective March 1, 2011:
 - a) All existing financial incentive programs provided for the change-out of toilets, urinals and clothes washers through the City's Water Efficiency Plan be terminated;
 - b) The "Summer Water Saver Program" be terminated;

- c) Toronto Water continue to offer the “Capacity Buy-Back Program” to the business community to help achieve water efficiencies. Efficiencies achieved are to be reported annually through Toronto Water’s Capital Budget submission;
 - d) Toronto Water continue, through the Capacity Buy-Back Program, to seek out opportunities with other Utilities to cost-share, where possible, the implementation of water efficiency measures and fixtures;
 - e) Toronto Water implement a City-Wide Water Loss Reduction and Leak Detection Program, beginning in 2011; and
 - f) The General Manager, Toronto Water, report through the annual Capital Budget and Water and Wastewater Rate Report submissions on progress made in reducing water consumption and water losses within its water transmission and distribution system.
2. The appropriate City Officials be authorized and directed to take the necessary actions to give effect thereto.

FINANCIAL IMPACT

Implementation of the recommendations contained in this report results in a net expenditure reduction of \$15.417 million to Toronto Water's Water Efficiency Plan projects from the 2010 – 2019 Approved Capital Plan of \$18.537 million.

As a result of these changes, the 2011 – 2020 Recommended Capital Plan includes \$3.120 million in funding for the modified Water Efficiency Plan, comprised of annual funding of \$1.120 million in 2011; \$0.950 million in 2012; and \$0.950 million in 2013.

The 2011 Recommended Operating Budget for Toronto Water includes a further annual reduction of \$0.497 million and 5.0 permanent positions resulting from the recommended changes to the Water Efficiency Plan.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

The City of Toronto’s Water Efficiency Plan (WEP) was approved by City Council at its meeting held on February 4, 5 and 6, 2003. A copy of the Council Decision Document can be found at:

<http://www.toronto.ca/legdocs/2003/agendas/council/cc030204/pof1rpt/cl029.pdf>

City Council, considered a report on the progress made in implementing the Water Efficiency Plan to the period ending 2005, at their July 25, 26 and 27, 2006 meeting. A copy of the Council Decision Document can be found at:

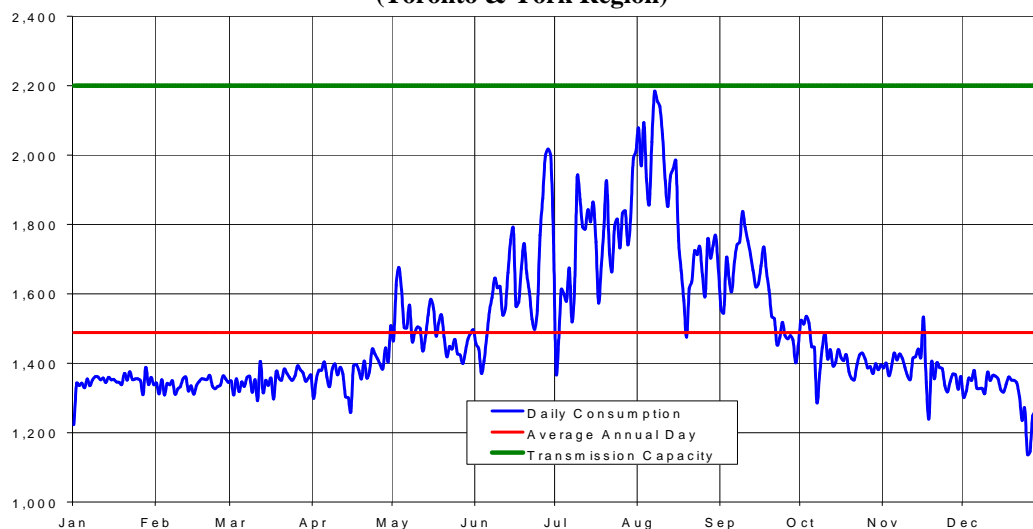
<http://www.toronto.ca/legdocs/2006/agendas/council/cc060725/wks5rpt/cl007.pdf>

In approving Toronto Water’s 2007-2011 Capital Plan and 2007 Operating Budget, at its meeting of February 5, 6, 7, and 8, 2007, City Council directed the General Manager of Parks, Forestry and Recreation and the General Manager of the Toronto Zoo, to report to the Public Works and Infrastructure Committee on the strategies of these divisions to improve water efficiency and related costs of these initiatives in support of the City’s Water Efficiency Plan and Toronto Water’s Water Loss Reduction Strategy. The Council Decision Document regarding this request can be found at: <http://www.toronto.ca/legdocs/mmis/2007/cc/decisions/2007-02-05-cc02-dd.pdf>

BACKGROUND

The City’s Water Efficiency Plan (WEP), approved by City Council in 2003, is aimed at creating “in-system capacity” by reducing water consumption across the City to service the population and employment growth which was projected to increase by 10 and 12 percent respectively, by 2011. Conversely, water treatment and supply infrastructure would have to be expanded to supply peak day demand flows during summer months for outdoor water use (e.g. lawn watering); and wastewater collection and treatment infrastructure would have to be expanded to service the additional wastewater flows generated (e.g. wastewater from toilets). The typical annual water consumption profile for the City of Toronto in 2001 is presented in Figure 1. This is comprised of an average estimated consumption of 1,259 million litres per day (ML/d) for the City and an additional annual average day demand of 229 ML/d supplied to York Region under an existing agreement. The figure shows a peak day demand of 2,210 ML/d (i.e. 1,850 ML/d and 360 ML/d for Toronto and York Region respectively) which was approaching present system transmission capacity. The Toronto peak day demand in 2001 represented an estimated 60% increase to the base consumption of 1,155 ML/d experienced during the off peak season (October to April).

**Figure 1 2001 Daily Water Consumption (ML/d)
(Toronto & York Region)**



By reducing water consumption, through the implementation of more water efficient fixtures and other measures, the WEP provided a way of creating capacity within the existing system and thereby deferring costly infrastructure expansions, while providing environmental benefits such as: decreased energy use for pumping, corresponding decreases in CO₂ emissions, decreases in chemical usage at water and wastewater treatment facilities, and a decrease in wastewater treatment plant effluent discharges.

Once fully implemented, the WEP was expected to reduce water consumption by 15% below the projected 2011 demand, as summarized in Table 1, this represented target reductions in peak day demands of 337 ML/d and wastewater flows of 148 ML/d, and when taking the total annual consumption, averaged on a daily basis, the average annual day demand reduction target translated to 212 ML/d.

Table 1 City of Toronto - 2011 Original Water Demand Projections and WEP Target Reductions

	Original 2011 Demand Projection (ML/d)	WEP 15% Reduction Target (ML/d)	Demand Target (ML/d)
Peak Day	2245	337	1908
Average Day	1411	212	1199
Wastewater Flows	988	148	840

The total cost to implement the WEP was estimated at \$74 million and represented good value to the City, at one-third of the estimated \$220 million (\$130 million for water supply and \$90 million for wastewater treatment) required for the equivalent expansion of water supply and wastewater treatment infrastructure.

In developing the WEP a number of water conservation/efficiency measures which could reduce wastewater flows and peak day demands were identified. These measures were screened for consideration on the basis of cost-effectiveness, ease of implementation and public acceptance. The “water use sectors” considered were single family residential, multi-unit residential, industrial/commercial/institutional, and municipal and the various measures are summarized as follows:

Single-Family Residential

- Toilet Replacement
- Clothes Washer Replacement
- Outdoor Water Audits

Multi-Unit Residential

- Toilet Replacement
- Clothes Washer Replacement
- Outdoor Water Audits

Industrial/Commercial/Institutional

- Toilet Replacement
- Clothes Washer Replacement
- Outdoor Water Audits
- Indoor Water Audits

Municipal

- Water Distribution System Leak Detection
- Computer Controlled Irrigation
- Watering Restrictions

The measures were further assessed on the basis of their maximum potential for water savings (i.e. if all existing stock of water fixtures were replaced with water efficient fixtures) and whether it was practical to achieve the measures within the WEP implementation period.

It was recognized that while old fixtures were being replaced “naturally” across all sectors (e.g. the service life of toilets is typically 25 years), water consumption reduction targets were unlikely to be achieved with these rates of replacements alone. In addition, while the Ontario Building Code mandates the use of ultra-low flush toilets for new house construction, high water consumption toilets were still being sold and were legal for installation for retrofit and home renovation purposes. As a result, financial incentives were provided to help direct consumer purchases and help offset the cost of implementing generally more expensive water conservation measures, thereby encouraging higher implementation rates.

Measure specific financial incentives were derived based on a “capacity buy-back principle”, wherein the estimated reduction in water use was used to derive the financial incentive of a value less than the cost of building an equivalent level of expansion in water supply and wastewater treatment (i.e. typically one-third). A corresponding sector specific implementation schedule was developed which included a public education and communications component.

It should be noted that while the United States Environmental Protection Agency (U.S. EPA) banned the sale of high water consumption toilets in 1994; and while City Council, in approving the WEP in 2003, recommended that the Province of Ontario develop enabling legislation to restrict the sale and installation of new toilets to only ultra low-flush models (i.e. six litres or less), it is only now being addressed by the Province in pending regulation expected later this year through the recently approved Bill 72 - Water Opportunities and Water Conservation Act, 2010.

COMMENTS

Toronto’s Water Use Profile

In 2009, the City of Toronto treated and supplied approximately 483 million cubic metres of water to Toronto and York Region, and collected 438 million cubic metres of wastewater.

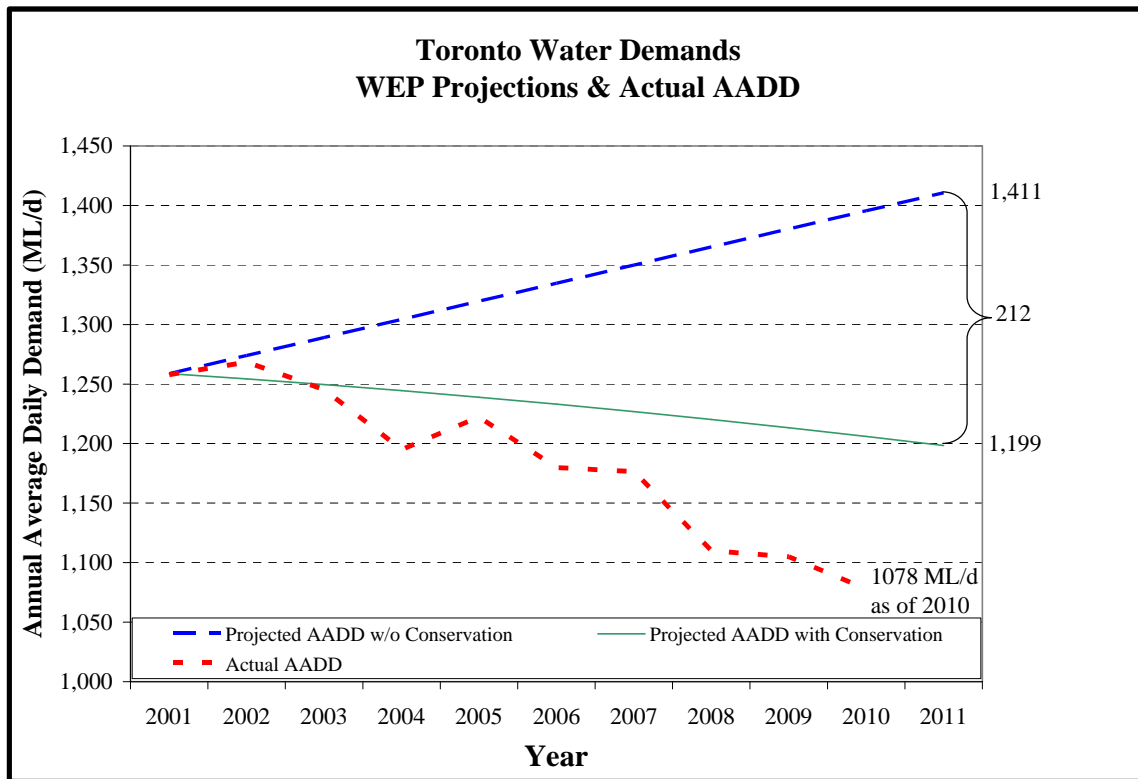
Toronto’s water use was approximately 403 million cubic meters in 2009 and is broken down between metered and non-metered customers. There are approximately 66,000 un-metered/flat rate customers in Toronto at this time and they are being converted to metered customers through the City’s Water Metering Program by 2013. Of the metered customers, the top 1,000 highest users represent 33% of the consumption of water supplied within the City. A recently completed assessment comparing water meter data to flows from water production plants, found that about 8 to 10 % of the volume of potable water supplied to the City of Toronto residents and business is considered non-

revenue. This is attributed largely to leakage from the distribution system and water lost through watermain breaks, fire hydrant (protection) use, and non-metered use within City properties (e.g. City owned parks, gardens and facilities).

Water Demand Projections and Actual Consumption

The original water demand projections presented in the WEP were derived based on population projections completed by the City Planning Division and based on Toronto’s Official Plan. Water demands are analyzed by using parameters such as: annual average day (the average daily demand during a full calendar year), average summer day (average daily demand between May and September), average base or winter day (average daily demand between October and April), and peak day demands (the highest single day demand of the calendar year). Each of these values is important as they illustrate historical and seasonal demand patterns. The WEP identified Toronto’s 2001 average annual day demand (AADD) as 1,258 ML/d. Figure 2 illustrates Toronto’s projected AADDs both with and without conservation measures, including the WEP, to the year 2011. For comparison, the actual measured AADDs between 2001 and 2010 are also presented in Figure 2.

Figure 2 Toronto Water Demands: WEP Projections and Actual (ML/d)



Toronto's 2010 AADD was estimated at 1,078 ML/d while the WEP projected a 2010 AADD of 1,206 ML/d and a 2011 AADD target of 1,199 ML/d. Based on these values it is clear that the original WEP 2011 target will be surpassed. Notwithstanding the population and employment growth which has occurred, the drop in AADD over the period 2001 to 2010 represents a 14% reduction in consumption.

A number of factors have contributed to the lower than expected water consumption demands which includes:

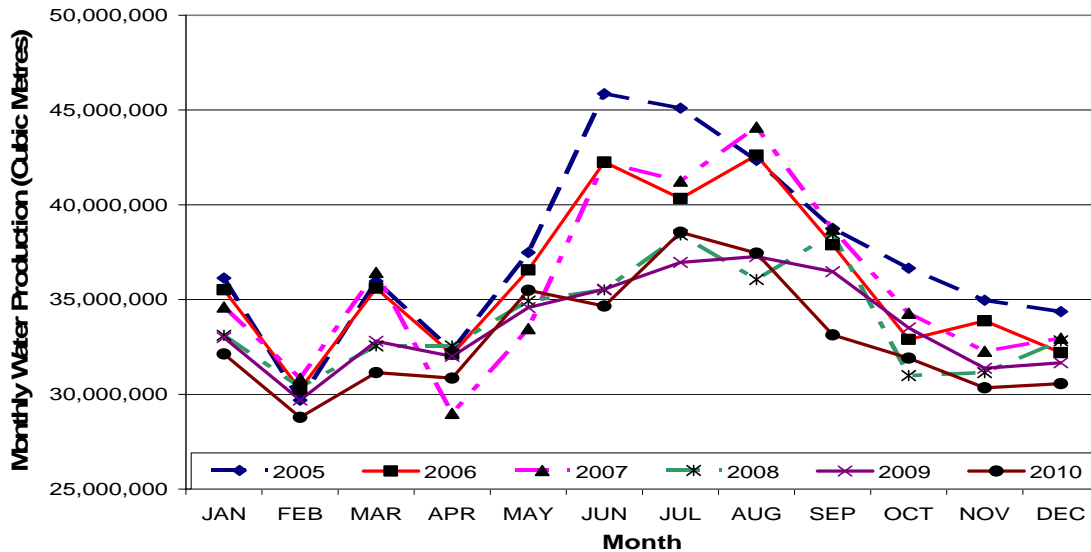
- the successful implementation of the WEP;
- lower than expected population and employment growth rates;
- the development and promotion of more efficient toilets and clothes washers;
- the introduction of the U.S. EPA's WaterSense water efficient product labelling program;
- price sensitivity of consumers to increased water rates;
- wetter summers; and
- a high level of public education and environmental awareness.

The water demand projections identified in the WEP were based on an expected population growth from 2.59 million in 2001 to 2.86 million in 2011, or about 27,000 persons per year, and an employment growth from 1.45 million in 2001 to 1.62 million in 2011, or about 17,000 employees per year. Actual population and employment growth rates have been lower than original projections. The average growth in Toronto's population since 2001 has only been about 5,200 persons per year and the average growth in employment during this same period is only about 5,000 persons per year.

Notwithstanding the growth in population and employment which has occurred between 2001 and 2010, water consumption has decreased significantly during this period, and is further highlighted in Figures 3, 4, 5 and 6.

Figure 3 presents a summary of monthly water production data for the period 2005 to 2010, and clearly shows that while there is a noticeable reduction in summer water consumption, there has also been a corresponding decrease in the base water consumption for the non-summer (October to April) period. Outdoor water use in Toronto typically begins seasonally in May extending to September, and this increased consumption over base water consumption represents about 40% of the total annual consumption.

Figure 3 Total Monthly Water Production (for Toronto): 2005 – 2010 (cubicmetres)



Base Consumption Demand

The average daily base consumption from October to April (i.e. winter demand), representing the base year round demand condition is presented in Figure 4. The Figure shows a steady drop in consumption from 1,155 ML/d in 2001 to an estimate of 1,015 ML/d in 2010, representing a 12 % decrease.

Figure 4 Average Daily Base Consumption (October to April): 2001 – 2010 (ML/d)

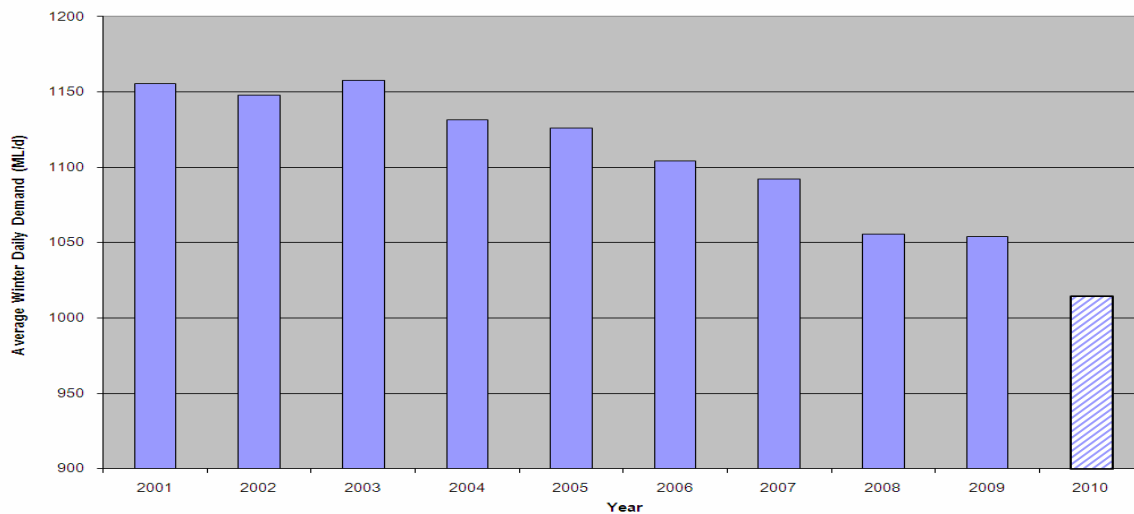
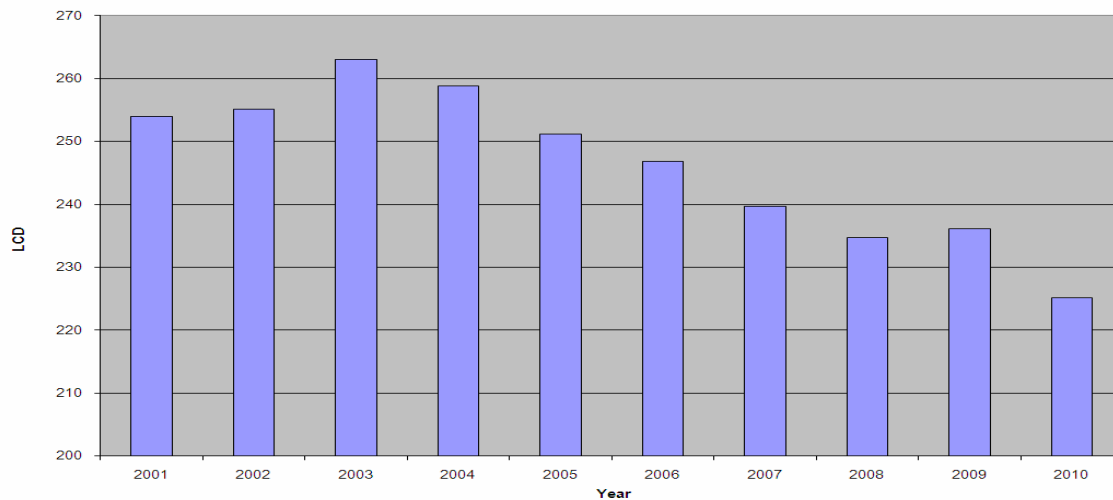


Figure 5 presents the average daily base from October to April residential per capita consumption which best represents the effects of water conservation within the City's population, and is a measure which should be tracked in future to further assess the impacts of conservation. Figure 5 shows that residential consumption has steadily decreased from a high of 263 litres per capita per day (LCD) in 2003 to an estimated 225 LCD in 2010, representing an estimated 14.5% decrease in average consumption – or a reduction of 2% per year.

Based on a recent analysis completed for Toronto Water, it has been projected that based on the "natural" rate of fixture and toilet replacement and the continued market trends towards the manufacturing and sale of increased water efficient fixtures (e.g. 4 litre flush volume toilets are currently entering the market) and appliances, Toronto's average per capita consumption could drop to 150 LCD by 2025. This reduction in consumption, and corresponding reduction in water use, if not compensated by an equivalent level of increased population growth, will adversely impact Toronto Water's forecasted revenues and should be closely monitored and reported during the annual water budget process.

Figure 5 Average Residential Per Capita Base Demand (October to April): 2001 – 2010 (LCD)



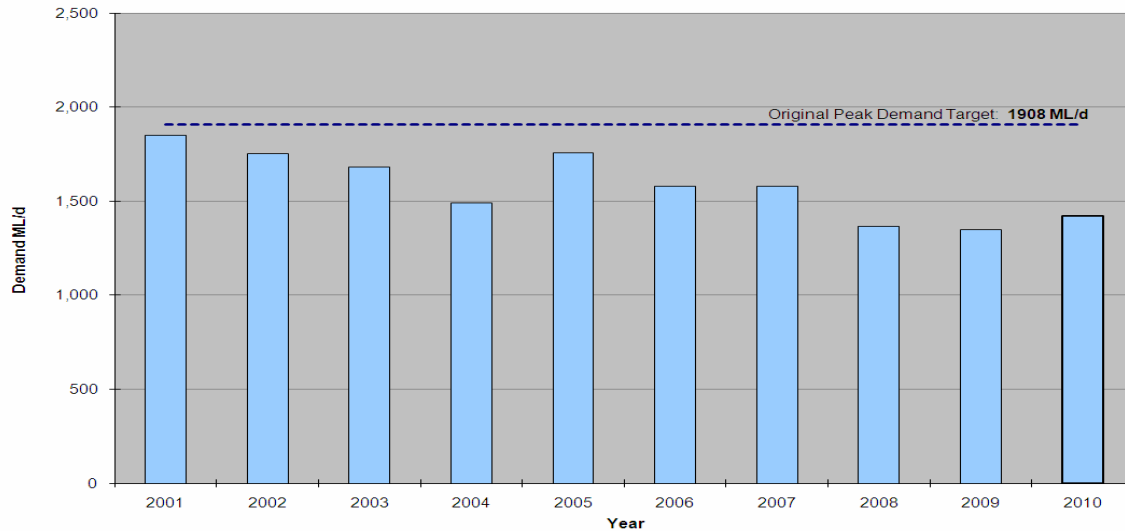
Peak Day Demand

Weather and changes in climate can have significant effects on water demands, especially outdoor water use (e.g. lawn watering). Water infrastructure is designed to meet the peak flow demands which typically occur during the summer after an extended period of dry weather. A true and sustained reduction in peak day demand helps defer or could eliminate the need for future water treatment and supply infrastructure expansion.

Figure 6 presents the annual peak day water consumption associated with outdoor water use, largely lawn watering, and also shows a significant drop from 1,851 ML/d in 2001 to

1,422 ML/d in 2010. While the peak day demands in 2008 to 2010 were relatively low, it should be noted that 2008 and 2009 had exceptionally cool and wet summers, while 2010 was generally noted for more seasonable temperatures and regular rainfall distribution. In contrast, the summers of 2005 and 2007 were unusually hot and dry however, the peak day demand recorded in 2007 was 1,576 ML/d, about 332 ML/d lower than the target peak day demand of 1,908 ML/d identified in the WEP.

Figure 6 Peak Day Consumption: 2001 – 2010 (ML/d)



Water Efficiency Programs

The implementation of the WEP has been a significant influence on the reduction of demands, both quantitatively and qualitatively. Rebate and incentive programs initiated as part of the WEP have resulted in large and measurable water savings. Table 2 provides a list of the WEP initiatives and a summary of the savings directly achieved by these programs.

Table 2 Summary of WEP Water Consumption Reductions for Incentive Based Programs (up to December 31, 2010)

Sector	Measure	Target WEP Water Consumption Reductions by 2011 (ML/d)	Actual** WEP Water Consumption Reductions (to Dec. 2010) (ML/d)	# of Incentives issued to Dec. 2010
Single-Family Residential	Toilet Replacement	26	15.6	134,865
		3.6	3.9	54,694

Sector	Measure	Target WEP Water Consumption Reductions by 2011 (ML/d)	Actual** WEP Water Consumption Reductions (to Dec. 2010) (ML/d)	# of Incentives issued to Dec. 2010
	Clothes Washer Program			
Multi-Unit Residential	Toilet Replacement – Public and Private	55.1	47.9	208,056
	Clothes Washer Program	8.5	1.5	5,756
Industrial, Commercial, Institutional	Toilet Replacement (Flush Valve & Urinal)	20	2.1	10,059
	Indoor Water Audit & Clothes Washer (Capacity Buyback)	10.2	10.4	94
Total (Measured)		123.4	81.4	413,524

Note: ** The numbers presented, represent reductions achieved through financial incentives provided by the City, and do not reflect the total number implemented across the City, including those for which financial support was not provided by the City.

As shown in Table 2, since the inception of the WEP, over 413,524 incentives have been issued, at a cost of \$37.3 million, to achieve a reduction in water consumption estimated at 81.4 ML/d. The equivalent value of infrastructure expansion saved is estimated at \$91.1 million based on the 2001 assumptions for construction costs contained within the WEP. However, drawing on recent contract prices for the F.J. Horgan Water Treatment Plant expansion, taking into consideration current market conditions and construction cost escalation factors, the noted capacity could equate to an estimated \$180 million in 2010 construction costs (i.e. an estimated 480% the cost of the financial incentives).

A recent analysis of annual water production data completed by the City determined that the City of Toronto's 2009 annual average daily water demand was approximately 121

ML/d lower than the projected 2009 demand without the WEP, when taking into account the impact of weather, population and employment. The remaining 48.4 ML/d water consumption reductions which have been observed is the result of a number of factors, including non-incentive based Water Efficiency Programs, a high level of public education regarding water efficiency conducted as part of the WEP, and a growing regard for the environment in general.

In 1996 the Ontario Building Code (OBC) began requiring efficient 6L toilets, 9.5 L/min showerheads, and 8.35 L/min faucet aerators to be installed in all new construction buildings. However, the City of Toronto, being a mature city, has much more of its potential water demand saving to gain by promoting water efficiency measures to its existing population. Therefore the WEP educational outreach programs coupled with the OBC requirements would ensure that the importance of water conservation is communicated across the City.

The WEP educational and outreach programs have been very successful, and research conducted by Ipsos Reid in 2009 has indicated that awareness of the WEP is quite high. Toronto's water efficiency advertising and promotions reached almost 80% of Toronto homeowners and there has been a significant change in consumer behaviour over the years as they are purchasing water efficient plumbing fixtures and appliances. According to the City's 2009 research, 89% of recent toilets purchased were a low-flow toilet and 85% of recent washers purchased were a water efficient model. Almost 100% of shoppers cited "water efficiency/low flow" as being a very important feature when purchasing a toilet or clothes washer.

At the time the WEP was approved by Council in 2003, there were very few low-flow toilets for consumers to choose from and, at that time, low-flow toilets were not seen as "proven technology". Introducing rebates and incentives has helped educate consumers and helped influence the market. As well, City of Toronto public education campaigns; growing environmental awareness; existing and pending legislative changes and a different marketplace, where most toilets and clothes washers available are now water-efficient, are all significant factors that have helped change consumer behaviour to the purchase of water efficient appliances.

The WEP mass advertising campaigns, participation in community events, and website information have made it possible for consumers to access accurate information and support their choices for water efficient fixtures and measures.

Water Efficiency Programs: Going-Forward

Based on the success noted above, the change in market conditions where the sale and promotion of water efficient fixtures and appliances have become the norm; the increase in awareness and support for conservation; and the pending regulations which would soon ban the sale of greater than 6 litre flush volume toilets, a review of the existing WEP programs was undertaken. Given the budgetary pressures facing Toronto Water, as evidenced in the 2011 Capital Budget submission, and the forecasted depletion of capital reserve balances, it is difficult to justify continuing to provide financial incentives for

many of the programs particularly in light of the City's estimated \$1.7 billion water and wastewater infrastructure renewal backlog.

A summary of the existing programs and recommended changes is presented in Table 3 and programs recommended for funding are briefly described in the following.

Table 3 Summary of Proposed Water Efficiency Plan Changes

Program	Recommendation	Details
Single Family Clothes Washer	Discontinue	Retail research has shown “inefficient” washers are outnumbered by efficient models, and market research found that the City’s rebate has little effect on a consumer’s buying decision.
Multi Unit Clothes Washer (Communal Laundry Rooms)	Discontinue	Discussions with leasing companies have revealed that front-loading washers are recommended to all their clients.
Summer WaterSaver Program	Discontinue	Replace with Landscaping Seminars to reach a wider audience.
Capacity Buyback (ICI)	Maintain Existing & Expand	Potential remains for water audits and efficiency projects among the Commercial, Institutional and Industrial Sectors
Spray ‘n’ Save	Maintain Existing	Partnership with Enbridge targets restaurants specifically, a relatively large segment of Toronto’s small businesses.
Public Education and Promotion	Maintain Existing	Promotion of programs is necessary to meet targets, and public education (such as public service ads) is needed to encourage conservation behaviours.
System Leak Detection	Update and Maintain Existing	Operational program to be initiated and maintained by Toronto Water throughout the City in an effort to maintain an efficient water supply and distribution system.
ICI Toilet/Urinal Replacement	Discontinue	Pending Regulations from the Province of Ontario are expected to ban the sale of greater than 6 litre flush volume toilets.
Single Family Toilet Replacement	Discontinue	Pending Regulations from the Province of Ontario are expected to ban the sale of greater than 6 litre flush volume toilets.

Program	Recommendation	Details
Multi Unit Toilet Replacement	Discontinue	Pending Regulations from the Province of Ontario are expected to ban the sale of greater than 6 litre flush volume toilets.

Capacity Buy-Back: Industrial-Commercial-Institutional (ICI) Sector

In this program, the City provides rebates to facilities that make physical or operational changes that save water (i.e. the City is essentially building "in-system" capacity) by reducing water consumption through the implementation of more efficient processes and measures, and thereby 'buying' additional capacity. To qualify for a City rebate, an ICI customer must undertake a third-party audit of the water demands at their facility (pre-audit). If the facility implements a water savings measure, a follow-up third party audit must be completed to verify the magnitude of water savings (post-audit). The amount of the City rebate is directly based on the water savings achieved by the facility, and based on a predefined formula representing a fraction of the cost of building an equivalent level of water and wastewater infrastructure expansion. As such, rebate levels vary from site to site, but the City is able to accurately track the savings achieved by this program.

Given the success of this program, and the City's interest in supporting a competitive environment for industries, a continuation of this program across the ICI sectors is being recommended. The benefits of this program, in helping to reduce operating costs for business is becoming ever more apparent as water rates rise, and as proposed in the companion report "2011 Water and Wastewater Rates".

Spray 'n' Save

In collaboration with Enbridge Gas Distribution Inc., Toronto Water promotes the "Spray 'N' Save" program for restaurants. Enbridge Gas Distribution Inc. offers a free high velocity pre-rinse spray valve to restaurant businesses. The program helps restaurant owners reduce water and gas consumption and thereby lower operating costs. The total cost of the value estimated at \$100 is cost shared at \$35 and \$65 for the City and Enbridge Gas Distribution Inc., respectively. The City's contribution at \$35 is less than the \$50 which would have been provided through the Capacity Buy Back Program. Continuance of this program is therefore recommended.

Education and Outreach

As noted earlier, much of the success of the WEP can be attributed to increased public awareness and education regarding water conservation. The WEP mass advertising campaigns, participation in community events, and website information have made it possible for consumers to access accurate information and support their choices for water efficient fixtures and measures; and it is proposed that these types of activities continue. Of particular note are efforts to further educate the public through the City's web site, where in 2009, the Water Efficiency website (www.toronto.ca/watereff) received over 43,000 visits. Visitors to the website learn about not only the rebate programs for the

residential and ICI sector, but also received advice on how to save water at work and at home, how to maintain a healthy lawn with minimal maintenance (i.e. watering), and how to choose water efficient fixtures and appliances.

Further, dissemination of information at popular shows such as: Home Show, Canada Blooms, Green Living Show, Canadian National Exhibition, Property Management Expo, Canadian Healthcare Engineering Society, Canadian Apartment Investment Conference, IIDEX/NewCon, etc. is also being recommended.

Finally, it is recommended that the existing WaterSaver audit program, wherein trained landscape advisors visit interested residential property owners to advise them of approaches to reduce overall summer outdoor water use, be replaced by comprehensive seminars led by industry experts, and made available to large groups of residents, and in partnership with Toronto retailers such as garden centres.

Water Loss Assessment and Leak Detection Study

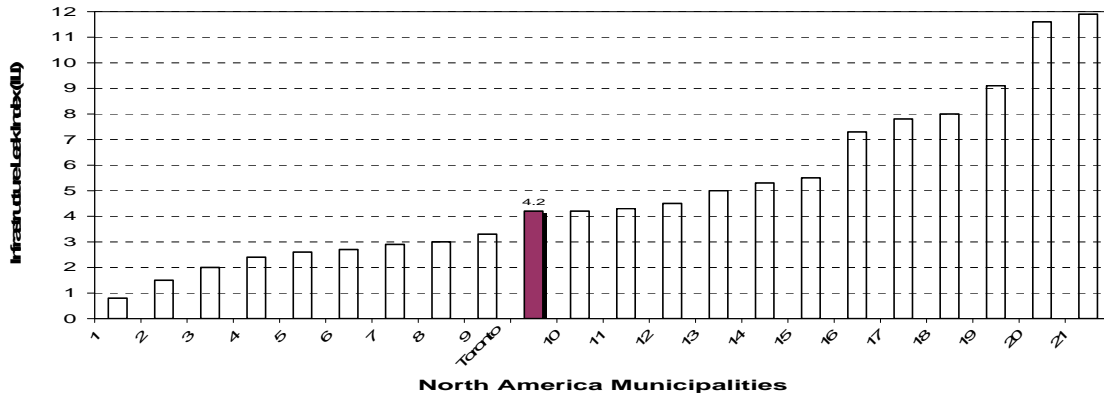
Toronto Water recently completed a Water Loss Assessment and Leak Detection Study. The study undertook to quantify the existing water losses and unbilled authorized consumption, i.e. non revenue water, including water distribution system leakage, loss of water through watermain breaks, use of water for fire fighting purposes, operations and maintenance of the distribution system including hydrant flushing, and unmetered consumption such as irrigation systems at some City parks and facilities. The study found that water losses were in the order of 8 to 10 percent of the production totals, estimated at an annual value of \$30 million in treatment and transmission costs.

Using the International Water Association (IWA) water audit methodology, now recognized internationally as the standard by which water utilities assess the level of water loss, the City of Toronto was found to have an infrastructure leakage index (ILI) average of 4.2, and is shown compared to other municipalities in North America and Internationally in Figure 7. As shown in the Figure, Toronto's results are in the middle of the range, but given the age and size of the system, the estimated ILI is not unreasonable, and significantly lower in comparison to other large older municipalities, for example, City of Philadelphia recently published its 2009 ILI of 8.

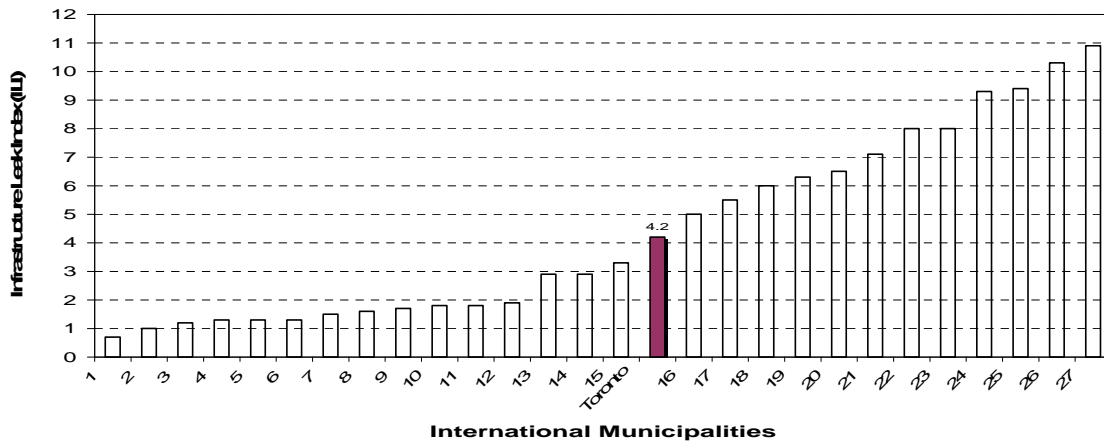
This indicates that the estimated water losses were 4.2 times higher than can be technically achieved. Further, the analysis showed that an ILI of 2.5 is an economically viable target for Toronto. This requires the implementation of a comprehensive program. It is estimated that this could achieve a leakage reduction in the order of 49 ML/d, estimated at an annual value of \$15.8 million in treatment and transmission costs.

Figure 7 Infrastructure Leakage Index Comparison
 (source: Veritec Consulting Inc. & ILMSS Ltd., 2010 – PIFastCalcs V3b)

a) North American Comparison of ILI



b) International Comparison of ILI



Through the study, a City-Wide Water Loss Reduction and Leak Detection Program was developed, which included a five year implementation plan. It is proposed that the implementation of this program be initiated in 2011 and that the ILI analysis be updated on an annual basis to help gauge progress made in reducing leakage, and as an overall measure of system integrity; and that this be reported through Toronto Water’s annual Capital Budget submission.

City Parks Water Audit – Pilot Program

Toronto Water and the Parks, Forestry, and Recreation (PFR) Division are now completing a pilot audit of water use at selected PFR facilities. Preliminary findings for the 50 pilot sites (chosen from an initial inventory of 300 sites) indicate that the majority of sites are metered however most of these meters have reached the end of their service life and will be replaced through Toronto Water’s Water Metering Program. The audit has found that the greatest potential for savings is through the replacement of inefficient

toilets, aerators and showerheads, and through PFR's continued retrofitting of non-efficient facilities and irrigation systems.

Toronto Water continues to work with all City Divisions to promote efficient water use throughout the City.

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