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LONG TERM WATER CONSERVATION STRATEGY ANNUAL REPORT

The Environmental Services Committee recommends the adoption of the recommendation contained in the following report dated February 17, 2012, from the Commissioner of Environmental Services.

1. RECOMMENDATION

It is recommended that:

1. The Regional Clerk circulate this report to the Clerks of the local municipalities and the Director of Central Region at the Ontario Ministry of the Environment.

2. PURPOSE

The purpose of this report is to update Council on the status of water conservation and efficiency programs and the Long Term Water Conservation Strategy Annual Report which meets the conditions of approval for the Southeast Collector Trunk Sewer Individual Environmental Assessment. York Region is the first Regional Municipality, in Ontario, required by the Ministry of the Environment to meet such unique and stringent conditions related to water conservation.

3. BACKGROUND

Ministry of the Environment requires an annual report detailing progress of the Long Term Water Conservation Strategy to meet conditions of approval for the Southeast Collector Trunk Sewer Individual Environmental Assessment

Approval of the Southeast Collector Trunk Sewer Individual Environmental Assessment included several conditions regarding the development, implementation and monitoring of a Region-wide Water Conservation and Efficiency Strategy and Inflow and Infiltration Reduction Strategy. The environmental assessment conditions of approval also required an annual report detailing the progress of implementing these Strategies which are to be submitted to the Ministry of the Environment twelve months after finalizing the strategy.

On March 31, 2011 York Region submitted the Long Term Water Conservation Strategy to the Ministry of the Environment which met the environmental assessment conditions of approval for the Southeast Collector Trunk Sewer. York Region will submit the first annual report to the Ministry of the Environment on March 31, 2012 to provide an update

on the status of the targets and implementation plans set out in the Long Term Water Conservation Strategy. Targets that are not met require mitigation plans to identify enhanced initiatives to be implemented in order to meet the targets, including the resources available.

4. ANALYSIS AND OPTIONS

York Region is on schedule to meet targets set in the Long Term Water Conservation Strategy

The Long Term Water Conservation Strategy identifies five year targets and timelines for total water savings and residential per capita demand. The strategy also sets out the annual participation rates and program implementation status necessary to meet these five year targets.

The *Water for Tomorrow* water-efficiency program is designed to provide the tools York Region residents need to conserve water in the home, in the garden and at work. Participation in this program for 2011 is estimated to be saving 1.8 million litres of water per day (MLD). This is on track to meet the Long Term Water Conservation Strategy target of 10 million litres of water saved per day by 2016 through existing York Region led water conservation programs and 3.4 million litres of water from new programs identified in the strategy.

Baseline residential per capita demand in 2011 was estimated to be 252 litres per capita per day (lpcd) in the Long Term Water Conservation Strategy. A summary of long term vision targets is shown in Table 1 below.

Table 1
Long Term Water Conservation Strategy Targets

	2011	2016	2021	2026	2031	2051
Long Term Water Conservation Strategy Target	252* lpcd	241 lpcd	233 lpcd	221 lpcd	206 lpcd	150 lpcd
Total Estimated Water Savings		13 MLD	19 MLD	34 MLD	73 MLD	244 MLD

*2011 value is baseline

Total water saved since *Water for Tomorrow* program began in 1998 is 24.2 million litres of water per day. That is equivalent to the average daily demand of approximately 100,000 residents in York Region in 2011.

Collaboration with local municipalities to share water billing data overcame a major constraint identified in the Strategy

One of the main constraints identified in the Long Term Water Conservation Strategy was the lack of access to water demand data collected from water meters as part of local municipal water billing practices. The Strategy stated that “securing access to usable, consistent water demand data is absolutely imperative for the effective execution and ongoing monitoring of the Strategy”. Regional staff worked closely with each of the nine local municipalities to review water billing data for 2010 and to develop a process to share data at regular intervals starting in 2012. Access to complete water demand data has enabled the Region to begin to develop a more accurate breakdown of water demand by sector, including residential, industrial, commercial and institutional and non-revenue water. A certain amount of non-revenue water is expected in municipal systems. Typical non-revenue water accounts for approximately 10-15 per cent of total flows in municipal systems in Canada. Non-revenue water is water supplied, but not metered, for example water used for emergency services such as firefighting, operational purposes such as proactive system maintenance flushing, loss due to leaks, etc.

Estimated total water demand by sector developed through preliminary analysis of 2010 water billing data and York Region supply data is summarized by residential demand, industrial, commercial and institutional demand and non-revenue water in Table 2 below.

Table 2
2010 Water Demand by Sector

Sector	Total 2010 Demand
Residential	213.8 MLD
Industrial, Commercial and Institutional	95.8 MLD
Non-Revenue Water (system maintenance, fire fighting etc.)	30.1 MLD
Total Demand	339.7 MLD

As recommended in the 2009 Water and Wastewater Master Plan Update, the Long Term Water Conservation Strategy assumed total water demand split between residential and Industrial, Commercial and Institutional demand was 67 per cent and 33 per cent respectively with non-revenue water assumed to be part of industrial, commercial and institutional demand. Preliminary analysis of water billing data along with York Region supply data shows that the 2010 Regional demand breakdown for residential is approximately 63 per cent with industrial, commercial and institutional demand at 28 per cent and non-revenue water at 9 per cent.

Per capita demand targets in the Strategy are based on previously limited data available and assumptions from the Water and Wastewater Master Plans. The Strategy forecasted the 2011 residential water demand to be approximately 252 litres per person per day.

Analysis using water billing meter data readings along with updated population estimates show 2010 per capita residential demand is approximately 220 litres per person per day.

Further analysis of additional billing data will be conducted to confirm that the lower per capita demand is accurate and not an anomaly for 2010. The impact of a lower per capita demand will result in a new 2011 baseline for water demand in York Region and require strategy targets to be updated.

***Water for Tomorrow* incentive programs saved 1.8 million litres of water per day in 2011**

Table 3 summarizes the targets of various incentive programs offered by York Region, 2011 participation and estimated water saved from each program. Due to continued success of the residential toilet rebate program, program marketing for other rebate fixture programs has been limited to avoid budget constraints. Overall water savings continue to be on schedule to meet 2016 total water saved targets.

Table 3
Water for Tomorrow Incentive Program Targets and 2011 Participation

Program	Strategy Target	2011 Actual	Estimated Water Saved (litres per day)
Residential Toilet Rebates	12,000 rebates	29,782 rebates	1,749,000
Single Family Residential Humidifier Rebates	1,000 rebates	57 rebates	3,200
Multi-unit Residential Washing Machine Rebates	150 rebates	0	0
Rain Barrels Sales	4,000 rain barrels	2,778 rain barrels	7,400
Industrial, Commercial Institutional (ICI) Toilet Rebates	6,250 rebates	2 facilities, 19 rebates	6,000
ICI Washing Machine Rebates	120 rebates	1 facility, 10 rebates	2,700
ICI Water Audits and Buy Back	10 audits, 1.5 buy back	9 audits complete, 1 application for buy back pending	0

Total water saved in 2011 through *Water for Tomorrow* programs is approximately 1.8 million litres of water per day, for a cumulative total of 24.2 million litres of water saved per day since program began in 1998. The total capital cost to implement these programs in 2011 was \$3.68 million. In 2011 *Water for Tomorrow* programs cost approximately \$2.07 per litre of water saved per day.

Continual program evaluation and improvement ensures York Region stays on target

Mitigation plans for programs not meeting targets have been developed as required by Ministry of the Environment conditions of approval. Total rebate participants far exceed the 2011 target. Staff will continue to monitor and evaluate the residential toilet rebate program against best in class jurisdictions and other Ontario municipalities to ensure targets are met within annual budgets. Continued monitoring and evaluation of the potential uptake for all other incentive programs will result in increased marketing to various sectors or, if required, an update of the targets based on the potential market within York Region.

York Region's standard for encouraging water efficient fixtures through incentive programs exceeds the requirements currently stipulated in the Ontario Building Code. Updates to the Ontario Building Code to incorporate higher efficiency fixtures could allow York Region to target rebates to high water users. This could reduce the cost of the rebate program by approximately \$500,000 annually.

Based on high cost and low water savings, staff propose that rain barrel subsidy and sales events be discontinued

Peer reviewers of the Long Term Water Conservation Strategy, including the Alliance for Water Efficiency, recommended the Region evaluate the efficacy of rain barrel sales events as part of a water conservation program and consider discontinuing the incentive if it does not prove to be cost effective. An evaluation of York Region rain barrel subsidy and sales events from 2009 to 2011 has demonstrated that due to high cost and low water savings, rain barrels are not a cost effective component of York Region's future water conservation program.

- If used regularly, each participating household could save approximately 1,100 litres per year compared to one participating household changing from 13 litre to WaterSense® labelled toilets can save approximately 49,000 litres per year
- Based on surveys and inspections completed on randomly chosen participants each year, 77 per cent of rain barrels purchased at York Region events were installed within their first year
- Need for winter maintenance and re-installation of rain barrels lowers the likelihood of installation each year

- Sales in 2011 declined significantly with only 2,778 out of 4,000 available rain barrels sold

Coordination of three sales events for 4,000 rain barrels cost \$74,000. In addition, York Region provided an average subsidy of \$14 per rain barrel, putting the total cost of the sales events at \$130,000. In 2011, the rain barrel program cost approximately \$17.50 per litre of water saved, this is considerably higher than the average cost for all *Water for Tomorrow* programs of \$2.07 per litre of water saved. Further, the significant drop in interest for the 2011 sales events indicates that market saturation has been reached.

Over 13,000 rain barrels have been sold and raised the awareness of water conservation and summer water use. Rain barrel subsidies and sales events are not considered a cost effective program to reduce water demand and will no longer be offered as part of *Water for Tomorrow*. Rain barrels are readily available at York Region retailers both online and seasonally in-store. Many sizes and varieties are available at costs ranging from \$80 to \$230. More cost effective programs to reduce outdoor water use are being developed as part of the Long Term water Conservation Strategy implementation plan.

***Water for Tomorrow* provides engaging education programs while seeking new opportunities and partnerships**

In addition to the ongoing successful education programs offered by *Water for Tomorrow*, staff are collaborating with both Toronto Region Conservation Authority and Lake Simcoe Region Conservation Authority to develop updated youth education programs.

Water savings resulting from education programs cannot be directly estimated in the same manner as a fixture rebate. However, overall education contributes to lower per capita demand and is required to support water conservation program messaging and drive long term behaviour changes necessary to meet long term goals. Education programs and targets set forth in the Strategy are summarized in Table 4 below.

Table 4
Water for Tomorrow Education Program Summary

Program	Strategy Target	2011 Actual
Water Efficiency Seminars	20 seminars	20 seminars
Free Landscape Visits	1,000 visits	821 visits
York Children's Water Festival	5,000 grade 4 students	5,000 grade 4 students

Free landscape visits have been offered through *Water for Tomorrow* for over ten years and popularity is beginning to decline. A more targeted approach to reduce outdoor water use is being developed as part of the Long Term water Conservation Strategy implementation planning.

York Region staff continue to improve programs targeting new development and municipal facilities

York Region currently has two sustainable development programs Sustainable Homes Incentive Program (SHIP) and Sustainable Development through LEED® aimed at low density and high density respectively. Both of these programs provide an incentive of water and wastewater servicing allocation bonus and contain a strong water conservation component.

In 2011, 218 high density housing units have been committed to be built as part of the Region's program. Developers have not yet committed to participating in the SHIP program. In November, 2011 Community Planning and Environmental Services staff held a workshop with members of Building Industry and Land Development Association (BILD) to discuss challenges and opportunities for improving participation in York Region's programs. At minimum, the goal is to increase participation to meet targets of the Long Term Water Conservation Strategy and the Regional Official Plan.

Environmental Services and Property Services staff have begun to incorporate similar water conservation measures, such as WaterSense® labelled fixtures and maximum flow rates into new municipal building standards and retrofit standards at York Region facilities.

Pilot projects provide an opportunity to test new and innovative programs in York Region

York Region has been conducting several pilot projects recommended in the Long Term Water Conservation Strategy, including a partnership with the Toronto Region Conservation Authority and the Town of Richmond Hill through the Sustainable Neighbourhood Retrofit Action Plan project in the Lake Wilcox community. This pilot includes a "Front-yard Makeover" eco-landscape demonstration on two residential front yards. The neighbourhood will be observed overtime to determine if the demonstration front-yards have influenced change within the neighbourhoods residential landscaping.

York Region is conducting an irrigation reduction pilot with ten industrial, commercial and institutional and multi-unit residential properties. The pilot includes a free analysis of an automatic irrigation system, with recommendations to reduce water wasted through irrigation technologies, equipment deficiencies and practices for each property. An incentive is available on the purchase and installation of a controller, water savings will be documented by a final audit. This pilot will wrap up in 2012 and if deemed a cost effective water conservation program, full implementation will follow in late 2012.

The Strategy recommends piloting an Expedited Approvals Process as an alternative incentive for "green building" programs to the existing incentive available in Sustainable Development through LEED® and SHIP. The "York Region Innovative and Sustainable Development Approvals Project" application for funding was approved by the Province

in late 2011. The purpose of this pilot project is to test efficacy of employing an expedited municipal planning approvals process as an incentive for builders and developers to construct “green buildings” specific to the needs of York Region. The Region has partnered with the Toronto Region Conservation Authority on this project and is exploring opportunities for partnership with local municipalities and developers.

Water audit underway to identify priority areas for leak reduction

Water loss management is a key program component in the Long Term Water Conservation Strategy. The Region is currently conducting a water audit using the International Water Association and American Water Works Association best practice methods to assess current levels of non-revenue water and water losses, including leakage. The water audit will be distributed to local municipalities for review and comment in April 2012. The results will identify priority municipalities to conduct a distribution system leak reduction program.

York Region continues to engage and seek input from the public during implementation of the Strategy

As recommended in the Strategy, an essential part of creating a culture of water conservation and efficiency in York Region is to establish a multi-stakeholder advisory committee to be a forum for ongoing advice, feedback and guidance to York Region with respect to specific water conservation and efficiency projects. The role of the advisory committee will be to:

- Advise Region staff on strategies and approaches related to implementation of Long Term Water Conservation Strategy
- Provide sector-specific insights and ideas
- Serve as water conservation program ambassadors to larger Regional community
- Help identify champions in various sectors.

The advisory committee will specifically provide input related to:

- Public perception on programs, initiatives, and by-laws
- Enhancements or modifications to existing programs
- Increasing uptake in sector specific areas
- Public campaigns and messaging

Advisory committee members will include representatives from a wide range of interested and affected stakeholder organizations, as well as members of the public, a list of members is attached in *Attachment 1*. The advisory committee will meet six times per year. The first meeting will be held in March 2012.

Link to Key Council-approved Plans

Integrating water conservation programming with water and wastewater infrastructure planning and sustainable community planning has been and continues to be a Regional priority. This commitment is reinforced in both the 2011-2015 Strategic Plan and the Regional Official Plan.

An objective of the Strategic Plan states that the Region will focus on continuing to deliver and sustain critical infrastructure necessary to support our growing communities by identifying and leveraging capacity available in the existing infrastructure. One method to achieve this objective is through increased water conservation per capita.

An objective of the Regional Official Plan is to ensure adequate water resources for today's residents and future generations, through conservation and efficiency.

- To develop a long term, innovative strategy for water conservation and efficiency
- To investigate full cost pricing of water, in co-operation with local municipalities, to encourage water conservation and facilitate system improvements
- To pursue with local municipalities and conservation authorities, the implementation of water efficiency innovations, such as water reuse systems, rainwater harvesting and innovative stormwater management
- To investigate innovative wastewater treatment technologies and approaches including grey water reuse, naturalized wastewater treatment and water recycling in residential, commercial, institutional and industrial uses

The Regional Official Plan also highlights specific policies to ensure water conservation is integrated into new developments to create high-quality sustainable communities by encouraging new buildings to achieve greater water conservation efficiency than currently stipulated in the Ontario Building Code.

5. FINANCIAL IMPLICATIONS

Capital expenditures for water conservation programs in 2011 totalled \$3.68 million, this included the completion of the Long Term Water Conservation Strategy. The 2012 10-year Capital Plan has committed to \$40.8 million over 10 years to deliver water conservation programming.

Water conservation programs are delivered at less than the cost of building or expanding water systems. Between 1998 and 2004 the Regional Municipality of York *Water for Tomorrow* conservation program deferred an estimated \$40 million in new infrastructure at a cost of only \$10 million. An analysis of the cost of programs recommended in the Long Term Water Conservation Strategy and their impact on deferring capital costs is currently under evaluation and will be available in the 2012 annual report to be completed in March 2013. Reduced water use comes with increased pressure on water

rates. This will be considered as future updates on the rates are brought forward to Council.

6. LOCAL MUNICIPAL IMPACT

Local municipal staff have been and will continue to be involved in developing and implementing the Long Term Water Conservation Strategy. Local municipal staff played a critical role in sharing water demand data collected through water billing to support the Region in meeting all Ministry of the Environment conditions. Accurately monitoring the amount of water saved will ensure that programs and initiatives remain on target now and in the future. To ensure ongoing success in water conservation is achieved, continued cooperation by the local municipalities is essential.

It is the expectation of the Ministry of the Environment that the Region and local municipalities collaborate to deliver the program components outlined in the Long Term Water Conservation Strategy.

7. CONCLUSION

York Region is on track to meet the water saving targets outlined in the Long Term Water Conservation Strategy. Access to water data from the local municipalities has allowed the Region to create a 2011 baseline for water demand by sector and residential per capita unit rate. The targets in the Long Term Water Conservation Strategy have been updated to reflect the more accurate and baseline.

An annual report detailing status of the targets and implantation plan will be submitted to the Ministry of the Environment and Southeast Collector Advisory Committee on March 31, 2012, twelve months after submitting the Strategy.

For more information on this report, please contact Laura McDowell, Director, Environmental Promotion and Protection at 905-830-4444 Ext. 5077.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)

Water Efficiency and Conservation Multi-stakeholder Advisory Committee Membership

The membership will include, but not be limited, to the following:

- Residents from York Region (1 or 2 representatives)
- Business (1 representative)
- Institutional (1 or 2 representatives)
- Commercial (1 representative)
- Builders/developers (1 representative)
- Water industry (1 representative)
- Community and/or multi cultural organization (2 representatives)
- First Nations (1 or 2 representative)
- Environmental organization (1 representative)
- Youth between the ages of 16 and 25 (1 representative)
- Conservation Authorities (1 or 2 representatives)
- York Region staff (2 to 3 representatives)
- Ministry of the Environment (1 observer representative)

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