1
LONG TERM WATER PROJECT
WATER USE EFFICIENCY PROGRAM - SCOPE OF WORK

The Transportation and Works Committee recommends the adoption of the recommendations contained in the following report, August 21, 2003, from the Commissioner of Transportation and Works:

1. RECOMMENDATIONS

It is recommended that:

1. Council endorse the continued *Water Use Efficiency Program* detailed in "The Future of Water for Tomorrow – Draft Scope of Work" as outlined in this report.

2. The program be implemented according to the schedule provided in the Draft Scope of Work as outlined in this report.

3. Staff be authorized to extend the working arrangement with United Utilities Canada Limited with a new five-year agreement for the implementation of the Program at a total cost of $2,533,687.

4. The provisions of the Regional Purchasing By-Law be waived.

5. Local Municipalities be encouraged to continue the maintenance of the Leakage Reduction Component in order to sustain the water savings achieved during the Water for Tomorrow Program.

6. A copy of this report be forwarded by the Regional Clerk to the Clerk of each local municipality.

2. PURPOSE

With the end of the contract with United Utilities Canada Limited for "Water for Tomorrow" approaching in the near future, the purpose of this report is to summarize the content of the Future of Water for Tomorro*w* – Draft Scope of Work and to recommend the continuance of the Program which is scheduled to terminate in 2004.

3. BACKGROUND

Faced with an enormous amount of growth, limited existing service agreements and potentially huge capital costs for major new infrastructure outside its boundaries, York Region embarked on a Water Supply Master Plan in 1996. The study objective was to develop a comprehensive long-term strategy to serve the Region's water supply needs to 2031.

3.1 Original Scope

As part of the York Region's Long Term Water Strategy, Water for Tomorrow, the Region's *Water-Use Efficiency Program* commenced on July 1st 1998. Managed by United Utilities Canada Limited, the program is designed to save 19 million litres of water per day by June 30, 2006, enough water to supply a town of 71,000 people. The overall budget for Water for Tomorrow, was $10.14 million for implementation spread over six years, and two years of maintenance at $2.31 million for a total contract of $12.45 million.

The program's Scope of Work, approved by Regional Council in April 1998, includes five distinctive activities:

- Residential/Commercial Retrofit Program
- Industrial/Institutional Audit Program
- Leakage Reduction Program
- Public Education
- Maintenance

As one of the four components identified in the Region's Water Supply Master Plan, water-use efficiency represents the lowest cost source of water. Aside from financial considerations, the Region's comprehensive program demonstrates to the public and to government regulators that it is taking a responsible approach to water supply by making the best use of existing resources.

Water for Tomorrow finished its fifth year on June 30th 2003. Over 118,000 home visits have been completed with over 63,000 of those visits resulting in a retrofit of a toilet or showerhead. 10,400 high rise residential apartments, 14,200 commercial businesses and 180 schools have participated. In total, over 231,000 early-closing toilet flappers and 99,000 water-saving showerheads have been installed since the start of the program.
To date, fifty industrial/institutional water audits have been completed by the consulting company contracted to implement this program. More than 1.4 million litres per day of potential water savings have been identified with paybacks usually less than two years. Three companies have implemented recommendations from the audit resulting in actual water savings of 426,000 litres per day.

Over 1,700 km of watermain has been tested in the municipalities of Aurora, Georgina, King, Richmond Hill, Vaughan, Newmarket, East Gwillimbury, Markham and Whitchurch-Stouffville. The leakage that has been identified and repaired represents over 2.39 million litres of water per day.

Public Education has been ongoing over the past five years with presentations, public displays and events, newspaper advertising, leaflet distribution and water bill bulletins twice per year. The award winning Student Education Program has been delivered to over 30,000 Grade 7 students in York Region. The teacher's manual and student activity books were recently updated, reprinted and distributed to all elementary schools. The
Water for Tomorrow webpage, which is constantly being updated received a major facelift in January 2002.

The ongoing maintenance activity ensures participant satisfaction is high and water savings are sustained. Rate of service calls on Residential/Commercial Retrofit participants is less than 2% of installs. Participant surveys continue to indicate satisfaction in the high 90's percentile.

Water for Tomorrow has demonstrated that water efficiency is an effective component of York Region's long term water supply strategy. Currently saving approximately 15.1 million litres of water per day, the project is well on its way to meeting and exceeding its objectives.

3.2 Enhancement through Maximum Day Demand Reduction Program

In 2001, the Maximum Day Demand Reduction Component was added to the *Water Use Efficiency Program*. This highly successful component is designed to educate York Region residents on the wise use of water during the summer months. This important component helps to reduce the excessive demands on water supplies during hot, dry summer months.

With the exception of maintenance, all other components of Water for Tomorrow will end June 30, 2004 as per the existing agreement between The Region of York and United Utilities Canada Limited. The maintenance component will continue another two years to June 30, 2006. Water for Tomorrow will have accomplished its technical objectives ensuring that most homes and businesses have water efficient fixtures. All municipal distribution systems have been extensively reviewed for leakage and sixty large volume industrial/institutional customers will have received a comprehensive water audit. Water for Tomorrow has gone a long way in changing the attitudes and habits of residents towards water use through public education. However public education is deemed as a long-term investment with special focus on our youth.

3.3 Monitoring and Evaluation

By the end of the Water for Tomorrow Leakage Reduction Program, ten permanent flow meters will have been installed with datalogging and telemetry. The ten areas to be monitored will represent approximately 32,000 residential customers.

The data collected from the meters will be used to monitor capita per day consumption, maximum day consumption and peak hour consumption. This information will assist in the evaluation of the programs and will provide insight for future planning.

3.4 Program Recognition

Over the past five years, Water for Tomorrow has been recognized by a number of organizations:

- Residential/Commercial Retrofit Component received the Ontario Water Works Association Award of Excellence (May 2000).
- Student Education Component received the Water Environmental Federation Public Education Award (October 2000).
- Student Education Component received the Ontario Water Works Association Award of Excellence (May 2002).
- Student Education Component received Honourable Mention from Federation of Canadian Municipalities' Sustainable Communities Awards (May 2002).
- Water for Tomorrow recognized by World Water Forum in Kyoto, Japan (March 2003).

4. ANALYSIS AND OPTIONS

4.1 Program Need

It is important to build on the success of the Program. Dry, hot summers and excessive demands continue to put pressure on the water supply system. Continuation of the *Water Use Efficiency Program* is required for the following reasons:

1. The cost of water use efficiency measures represents the cheapest "source" of water supply for the Region at about 25% of the cost of new surface water supplies.
2. Water use efficiency measures help to defer the need for major capital expenditures and can assist in reducing supply allocations for area municipalities.
3. Key review and approval agencies, such as the Ministry of Environment and the Ministry of Natural Resources, are reluctant to support new capital projects without a demonstrated commitment to water use efficiency by the proponent.
4. Water use efficiency is a required component of Watershed Plans required under the Oak Ridges Moraine Conservation Plan.
5. Water use efficiency is effectively a source of water supply similar to a water supply from a treatment plant. Maintenance is required to sustain the water savings from water

efficiency, similar to the required maintenance to sustain the supply from a plant. To sustain the savings achieved during the six years of Water for Tomorrow, ongoing maintenance and education will be required.

6. City of Toronto has recently launched a ten year $74 million water efficiency initiative designed to save 266 million litres per day of water on peak day. As a major supplier of water to York Region, it will be their anticipation that we will continue to demonstrate leadership in the area of water efficiency.

4.2 Program Features Required

The following components are considered by staff to be essential to an ongoing program:

- A public education component including water bill inserts, literature, displays, newspaper advertising and speaking engagements.
- A youth education component including ongoing support of the Grade 7 Water for Tomorrow curriculum module, student activity books, calendar poster drawing contest, teacher training and in-class presentations.

A summer water use reduction component including water efficient landscape audits performed by four horticulturists, public workshops and presentations, displays at

- Homeshows and community events, newspaper advertising, water efficient displays gardens located throughout the region at partnered garden centres, local municipalities and other institutions.
- A maintenance component which will ensure ongoing maintenance of the low-flow showerheads and early-closing toilet flappers installed during the Water for Tomorrow Program.

Co-ordination and facilitation of York Children's Water Festival, a four-day festival held each year where up to 4,000 elementary school children come together to learn about water issues while participating in fun and interactive activities.

4.3 Benefit/Cost Analysis

The future of Water for Tomorrow lies mainly with education. Education will help sustain the savings made during the six years of the Water for Tomorrow program. In addition, education will provide additional savings. The American Water Works Association (AWWA) suggests that additional savings of 4 to 5% may be expected from ongoing awareness programs.

Water Efficient Landscape Audits, associated with the Summer Water Use Reduction component, are expected to provide reductions in peak day demand in excess of 200 litres per participating household. This is based on monitoring and evaluation studies completed on similar programs in the Regions of Durham and Halton.

It is anticipated that 14.5 million litres/day of additional water savings will be achieved by continuing audits and education. The is based on a 4% projected savings and the 2002 peak day demand of 362 million litres per day.

Additional Peak Day Savings by the end of 2008:	14.5 million litres/day
Total Cost of the Program by end of 2008:	$2,533,687
Cost per litre/day saved through conservation:	$0.17 litre/day
Estimated cost for new infrastructure for 14.5 ML/day:	$0.47 litre/day

As illustrated, water efficiency and conservation is far more cost effective than the construction of new infrastructure. To save 14.5 million litres per day of water through conservation will cost $2,533,687. To construct new infrastructure to deliver the same amount of water would cost $7,004,899 making water efficiency and conservation the best value for the Region.

5. FINANCIAL IMPLICATIONS

Staff requested United Utilities Canada Limited to prepare a scope of work to continue the Program and an estimated cost. Staff have reviewed the cost estimates and concur that it represents good value to the Region. A budget as indicated in this Section of this report is required for the implementation of the future Water for Tomorrow Program. This budget would be incorporated into the 2004 10 year capital plan.

5.1 Program Budget

The various components of the new scope will be introduced at different stages:

Table 1
Program Schedule and Budget

Program	Commencement Date	Annual Budget
York Children's Water Festival	January 2004	$ 74,400
Public Education	July 2004	114,940
Youth Education	July 2004	92,326
Summer Water Use Reduction	September 2004	248,760
Water Saving Toilet Flapper/Showerhead	July 2006	$ 93,580

Although the budget provided for the individual components is on an annual basis, the commitment will be five years to ensure consistent delivery of the program into the future.

5.2 Annual Budget

The budget is in 2004 dollars and would be subject to inflationary increases. As with the original Program, the continuance will be funded 80% from development charges and 20% from water rates. The continuance of the Water for Tomorrow Program, which includes an extensive education component, encourages water efficient technology and conservation in order to reduce future water demand and defer costly infrastructure.

Table 2
Total Annual Budget

Year	2004	2005	2006	2007	2008
Budget	$178,033	530,426	577,216	624,006	$624,006

6. LOCAL MUNICIPAL IMPACT

Continued implementation of the Water for Tomorrow Program as outlined in this report will help to delay or reduce the need for outdoor use bans during the coming summers. In addition, water use efficiency will increase the available supply to the local municipalities assisting in meeting future demands caused by growth.

During the last five years of the Water for Tomorrow Program, the Distribution Leakage Reduction Program has provided significant benefits to the local municipalities. In addition

to the 2.39 million litres per day of current water savings, an extensive review of each municipal distribution system was completed. This exercise provided valuable information for the municipalities to use in updating their plans and maps. It is recommended that the local municipalities budget to maintain the leakage work that has been done. Regional staff can provide assistance to the local municipalities in preparing their maintenance plans.

7. CONCLUSION

The Water for Tomorrow – Draft Scope of Work prepared by United Utilities Canada Limited provides the necessary detail to assess the costs and benefits of the Region's *Water Use Efficiency Program* and begin program implementation based on the schedule provided in this report.

The Senior Management Group has reviewed this report.