

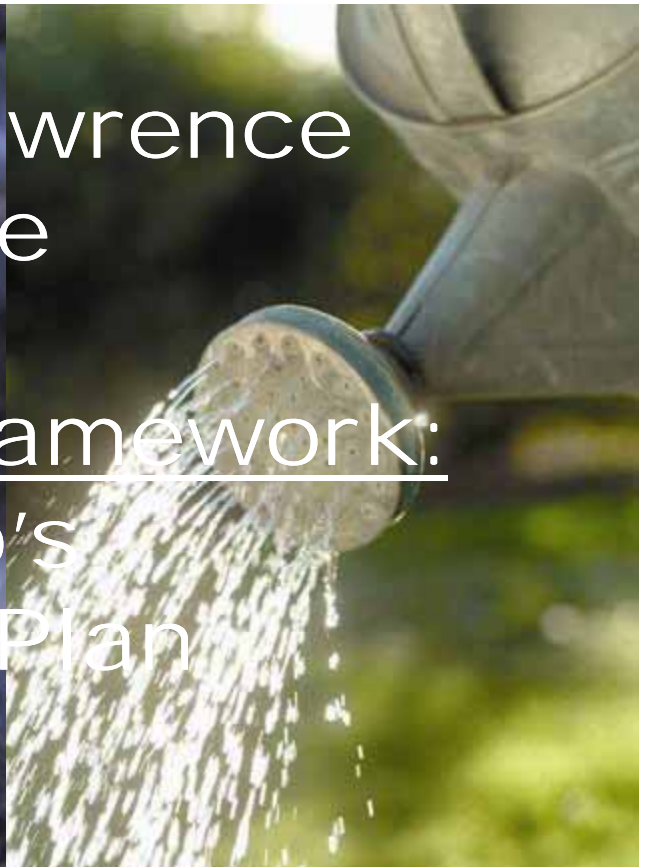
TORONTO

Water



Great Lakes & St. Lawrence
Cities Initiative

Water Conservation Framework:
City of Toronto's
Water Efficiency Plan



Mayor David Miller, City of Toronto
and Lou Di Gironimo, General Manager, Toronto Water



Presentation Overview

- **GL&SLCI - Water Conservation Framework**
- **City of Toronto's Water Efficiency Plan**
- **Water Loss and Leak Reduction Study**



GL&SLCI Water Conservation Framework

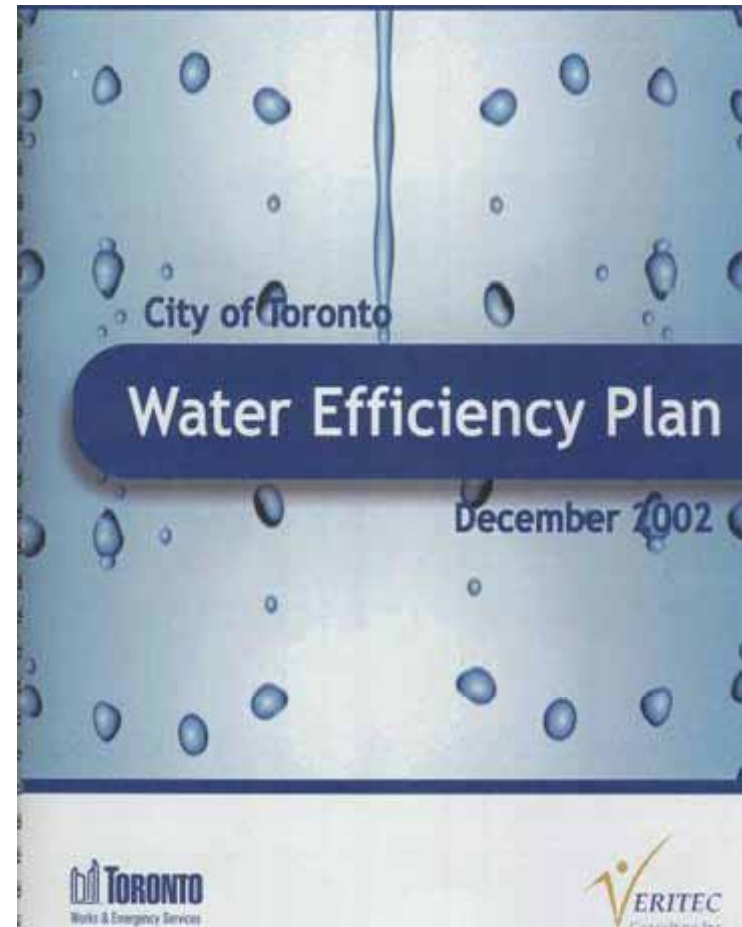
- **Resolution for voluntary commitment passed in 2006**
- **Resolution recognized unique position of municipalities:**
 - to encourage water use reductions through a number of measures
 - infrastructure renewal to reduce water losses and leakage
- **Focus:**
 - conserve water
 - encourage best practice sharing among GL&SLCI members
 - report annually on progress
- **Target water use reduction of 15% (below 2000 levels) by 2015**
- **Cities to reconvene prior to 2015 to develop 2025 goal**

GL&SLCI Water Conservation Framework

- **Cities with existing water conservation programs are to provide by June 1, 2007:**
 - overview of the program
 - volume of water saved annually and energy reductions
 - successes to date and lessons learned
- **Cities without programs are asked to notify GL&SLCI of their intent to participate in the Framework by June 1, 2007 including:**
 - expected date for development of water conservation plan

Toronto's Water Efficiency Plan

To defer or reduce the capital costs associated with constructing or expanding water and wastewater infrastructure by implementing measures expected to reduce average and peak day water demands, and wastewater flows.



Toronto's Water Efficiency Plan

Average Annual Day Demand (AADD)

- annual water production divided by 365 days per year
- about 70% of AADD is returned as wastewater flow
- 2001 AADD = **1,488 ML/d** (Toronto 1,258 + York Region 230)
- **Target 2011 Total Water Savings 175 ML/d (Toronto only)**
- **Target 2011 Wastewater Savings 123 ML/d (Toronto only)**



Toronto's Water Efficiency Plan

Peak Day Demand (PDD)

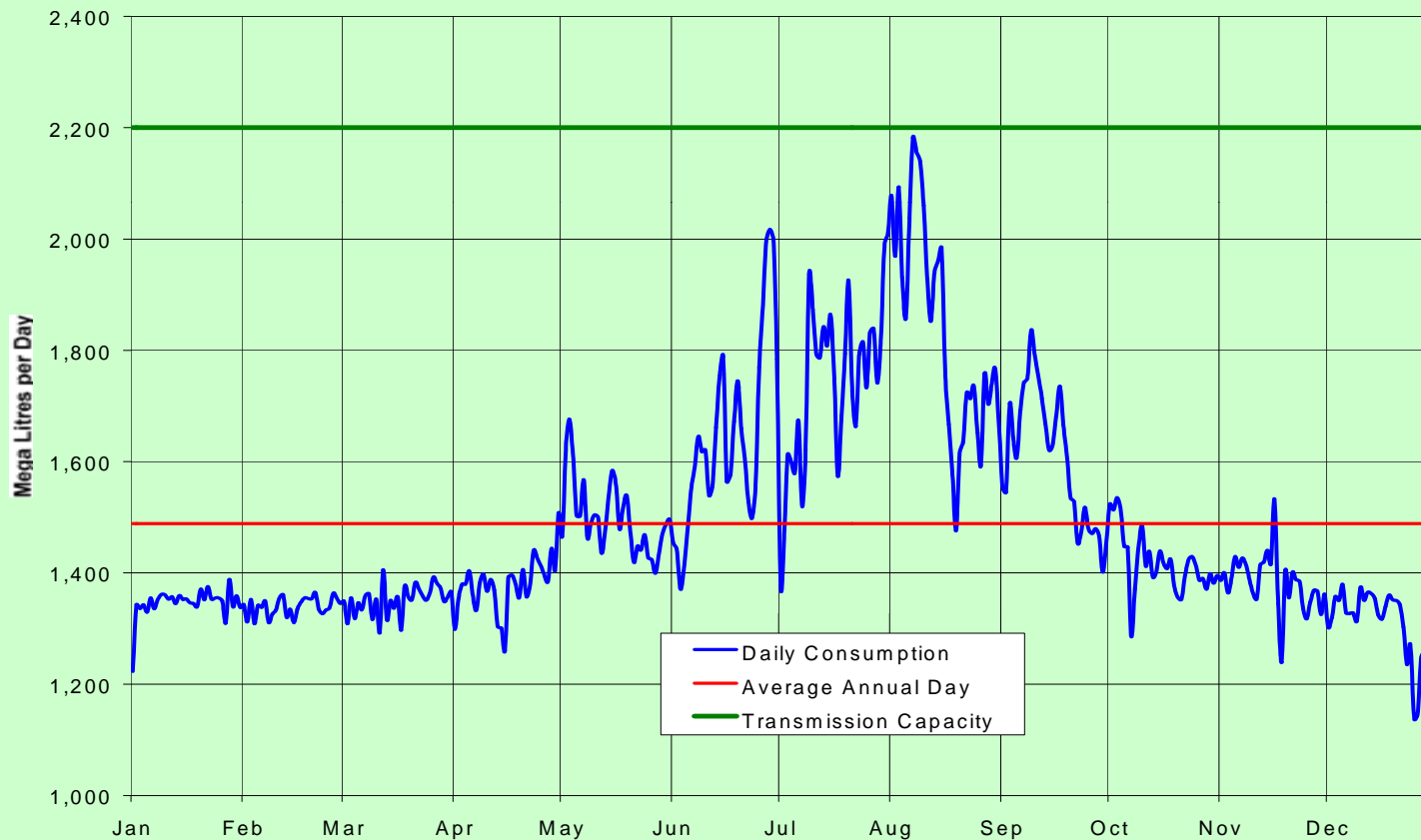
- associated with summer outdoor water use
- 2001 PDD= **2,211 ML/d** (Toronto 1,851 + York Region 360)
- **Target 2011 Total Water Savings 266 ML/d (Toronto Only)**



Annual Water Consumption



Water Consumption 2001
(City of Toronto and York Region)



Long-term Capacity Needs

City of Toronto Growth Projections for 2011

Population will grow from 2.59 to 2.86 million

Employment will grow from 1.45 to 1.62 million

Water demand (AADD) will increase from:

1,250 ML/d to 1,415 ML/d

Growth = Need for Infrastructure Expansion



Water Efficiency Measures

- **Over 70 measures were identified in the WE Plan**
- **Measures were screened for:**
 - technical feasibility
 - applicability
 - social acceptability
- **Cost/benefit analysis was completed for all measures passing the initial screening**
- **Seven measures were short-listed**

Sector-Specific Measures

Municipal

System Leak Detection

Computer Controlled Irrigation

Watering Restrictions

Multi-Unit Residential

Toilet Replacement (public housing)

Toilet Replacement (private housing)

Clothes Washers

Outdoor Water Audits

Single-Family Residential

Toilet Replacement

Clothes Washers

Outdoor Water Audits

ICI

Toilet Replacement

Clothes Washers

Outdoor Water Audits

Indoor Water Audits

Target Water Savings

Projecting Water Savings:

- **Maximum Water Savings (100% participation)**
- **Target Water Savings (anticipated participation rate)**

Example: Toilet Replacement Program for Single-Family Sector

- Maximum Water Savings = 64 MLd

- Target Water Savings = 26 MLd

Equivalent Cost of Infrastructure Expansion

Water Treatment and Supply

\$0.47 per L/d (2002 dollars)

Wastewater Treatment

\$0.65 per L/d (2002 dollars)

Combined Costs

\$1.12 per L/d (2002 dollars)

Assessing Plan Cost Effectiveness

- **Financial incentives provided for implementation of water efficiency measures are based on equivalent cost of infrastructure expansion**
- **Compare cost of infrastructure expansion to cost of implementing the Water Efficiency Plan**
 - \$220 million vs. \$71.5 million
 - Overall cost benefit ratio = 0.33

Environmental Benefits

- Reduce energy and chemical requirements
- Reduce emissions of CO₂
- Reduce Wastewater Treatment Plant effluent flows:
improve water quality
- Reduce our ecological footprint
- Provides opportunity for lower water billing costs

Toilet Replacement Program

Multi-Unit Toilet Replacement Program

- Incentives issued: 144,335
- Estimated Water Savings: 35 ML/d
- Target by 2011: 55 ML/d

Residential Toilet Replacement Program

- Incentives issued: 34,052
- Estimated Water Savings: 4 ML/d
- Target by 2011: 26 ML/d

ICI Flush Valve Replacement Program

- Incentives issued: 3,419
- Estimated Water Savings: 1 ML/d
- Target by 2011: 20 ML/d



Clothes Washer Program

Residential Washer Program

- Incentives issued: 16,693
- Estimated Water Savings: 1.2 ML/d
- Target by 2011: 3.6 ML/d

Multi-unit Residential/ICI Washer Program

- Incentives issued: 2,338
- Estimated Water Savings: 0.6 ML/d
- Target by 2011: 8.5 ML/d

Residential Washer Program

Wash 'n' Save

\$60
cash back
plus...

Reduce your water and energy use with a high-efficiency washer.

TORONTO Water

420 in Tide HE Savings

The graphic features a teal header with the text 'Residential Washer Program' and 'Wash 'n' Save' in large, bold letters. Below this is a green circle containing '\$60 cash back plus...'. To the right, a text box says 'Reduce your water and energy use with a high-efficiency washer.' The central image is a white front-loading washing machine with several blue water droplets and a dollar sign icon floating around it. At the bottom of the machine is a circular logo for 'Tide HE Savings' with the number '420' and the text 'in Tide HE Savings'. The 'TORONTO Water' logo is at the bottom left of the machine, and a larger 'TORONTO' logo is at the bottom right of the entire graphic.

Summer Water Saver Program

Free lawn and garden assessments for Toronto homeowners

- 2,000 free visits for single family homes
- Free water-efficient gardening seminars
- Demonstration gardens
- Free rain gauges

Targeted Campaign (~800 homes)

2006 (normal rainfall)

- Control: 833 litres/day
- Participants: 547 litres/day

2005 (hot & dry summer)

- Control: 881 litres/day
- Participants: 672 litres/day



 TORONTO Water

 **TORONTO**

ICI Capacity Buy Back Program

Results 2005-2006:

- 21 projects, including:
 - **Redpath Sugars** - reuse once through cooling water
 - **Alcan Packaging** - conversion to closed loop system for cooling water
 - **Fairmont Royal York Hotel** - water softening system reduced laundry rinses

- Savings: 2.5 ML/d
- Incentives paid out: \$606,000
- Equivalent cost: \$2,800,000
- Cost/Benefit Ratio: 0.21



Water Loss Assessment and Leak Detection Study

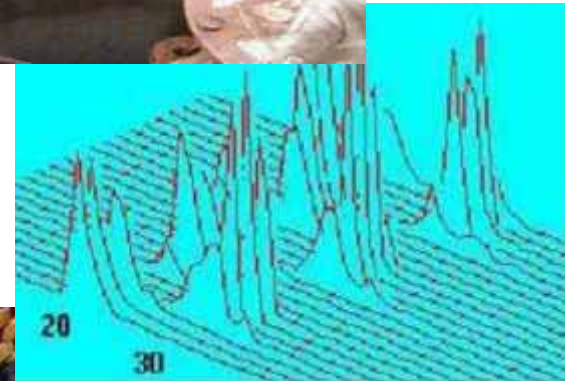
WEP target reduction of 29 ML/d (13 % total)

Approach:

- Undertake IWA Water Audit & Balance: Infrastructure Leakage Index (ILI)
- Evaluate Current Practices
- Test Strategies on a Pilot Basis
- Develop Implementation Plan

Other strategies being considered:

- Universal Metering
- Leakage Control (field surveys)
- Pressure Management (where applicable)
- Infrastructure Management and Renewal
- Watermain Break Repairs (speed and approach)
- Reservoir & Storage (leakage surveys)



Success so far...

In 2006:

- 97 per cent of incentive targets were met
- AADD 1,409 ML/d
- PDD 1,916 ML/d

2011 Targets:

- AADD 1,313 ML/d
- PDD 1,945 ML/d

