

Peak Demand Management Waterloo Region



**Great Lakes
Commission,
July 23, 2014**

Steve Gombos
Manager, Water
Efficiency

DOCs #1673466



WATERLOO REGION

IN THE NORTH AMERICAN CONTEXT





Region of Waterloo

The Region's Water Supply

➤ Population

- 2011: 553,000 people
- 2031: 729,000 people

➤ Water System

- Integrated Urban System
- 16 Rural Systems
- 75% Groundwater
- 25% Surface Water

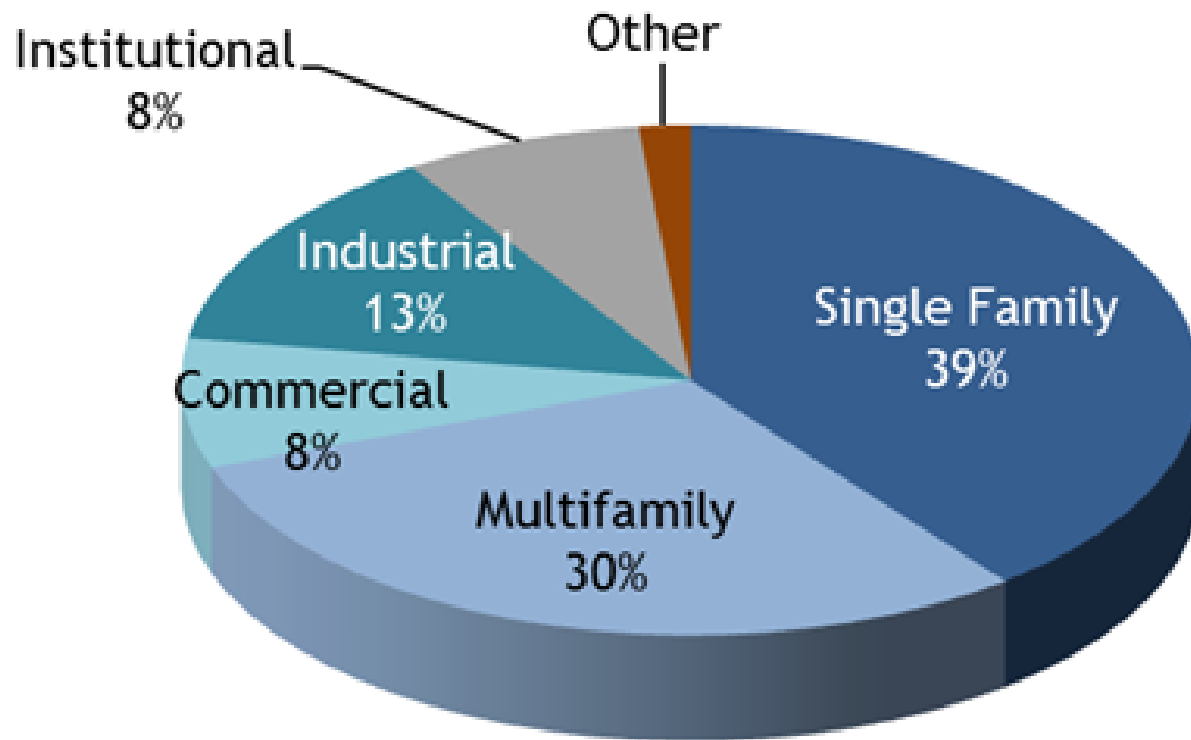


GIS department.

Retail Water Costs

- Average \$3.45 water & wastewater combined (per m³)
- \$13.06 per 1,000 U.S. gallons

Water Demand by Sector



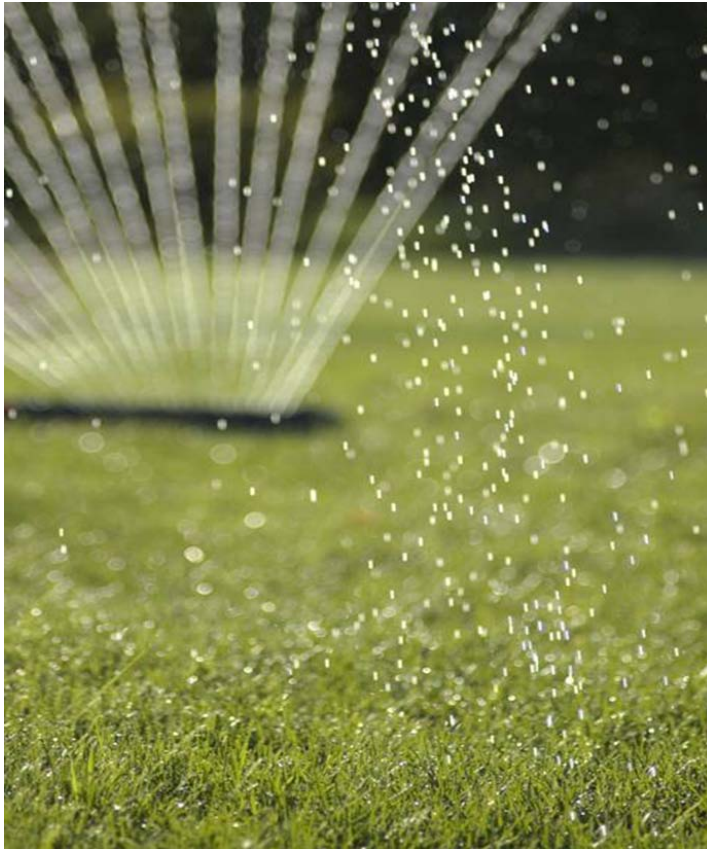
We Believe in Water Efficiency

- 1974 - Delivered first conservation programs
- 1998 – First Water Efficiency Master Plan – results exceeded goals
- 2007 – 2015 Master Plan Exceeded Goals
- WEMP for 2015 – 2025 approved June 4/14
- Now fine tuning program offerings/budget (about \$1.3 million per year)

Recent Financial Benefits

- Already deferred \$100 mill in capital
- \$1 million avoided water operating
- \$1.5 million avoided wastewater op
- Defer/avoid \$1 billion pipeline
- CO₂e reductions

Conservation By-Law – The New Normal



- Automatic May 31 – Sept. 30
- Implemented since 2005
- Key is 1x/wk lawn watering
- More effective than odd/even

Catalysts

- Very high peaks in 2001 – 2002
- Reservoirs drained quickly
- Lack of buffer to fight fires
- Loss of 5 MGD well field due to contamination
- Diminishing sources of new water
- Odd/even by-laws not effective
- More stringent examples promising

Once Per Week Lawn Watering

Watering Day

Last Digit of
Address

Monday

0, 1

Tuesday

2, 3

Wednesday

4, 5

Thursday

6, 7

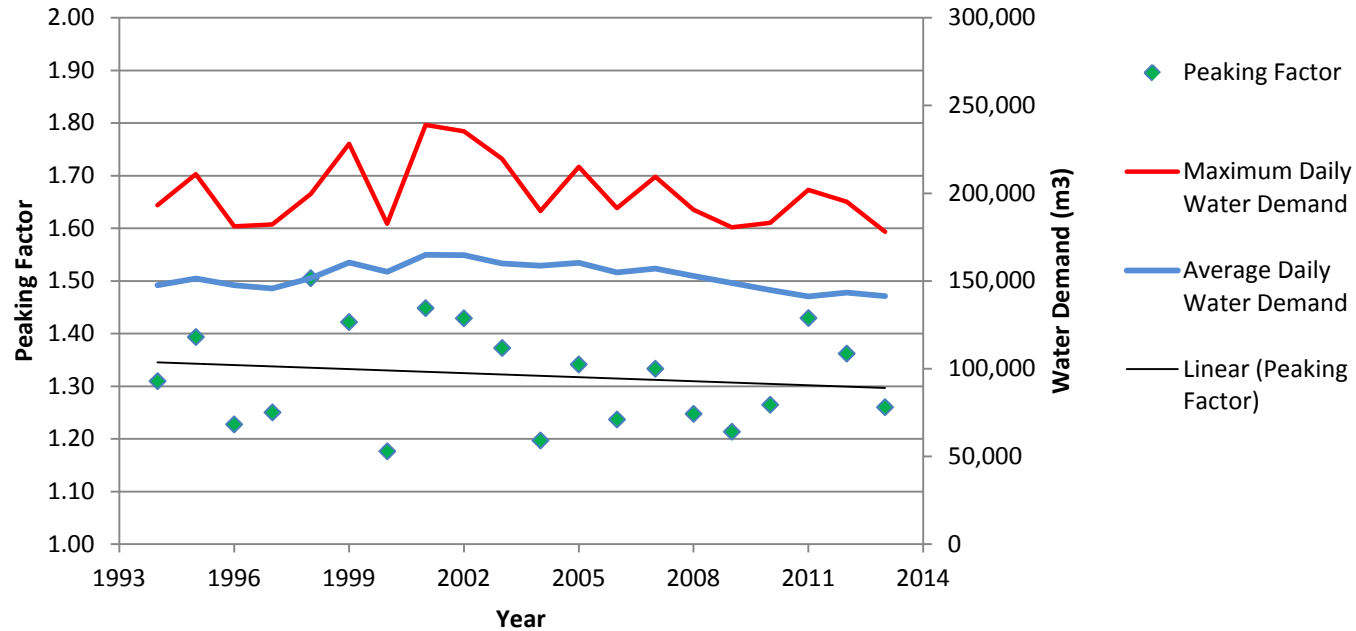
Friday

8, 9

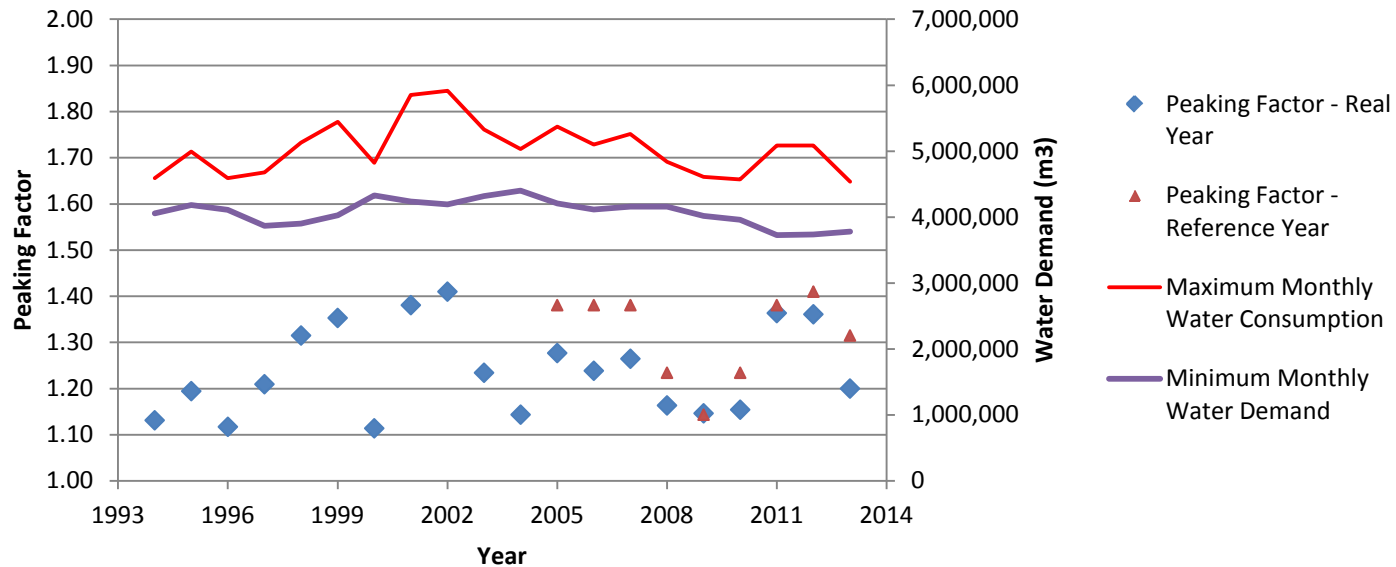
**REGION OF WATERLOO OUTDOOR WATER USE BY-LAW
SUMMARY OF 2006 RESTRICTIONS**

Program Levels	Stage1	Stage 2	Stage 3
Wasting Water	Local Municipalities' Odd-Even By-Laws	Prohibited	Prohibited
Watering Lawns		Once Per Week With Time Restrictions	Prohibited
Watering Treated Lawns		Water Within 24 Hours	Prohibited
Watering New Lawns		Daily first 7 days; alternating to day 14*	Prohibited
Watering Trees, Shrubs, Flowers, Gardens		Alternate Day With Time Restrictions*	Hand Watering Devices Only
Water Sports Fields		No Restrictions	Once Per Week With Time Restrictions
Top-Ups of Permanent Residential Swimming Pools		Alternate Days with Time Restrictions*	Limited or Prohibited
Residential Vehicle Washing		Alternate Days With Time Restrictions*	Prohibited
Decorative Fountains		Must Recirculate Water	Prohibit Filling
Washing Streets, Driveways, Walkways, Buildings		Prohibited	Prohibited
Fines		\$150 - \$5,000	\$225 - \$5,000

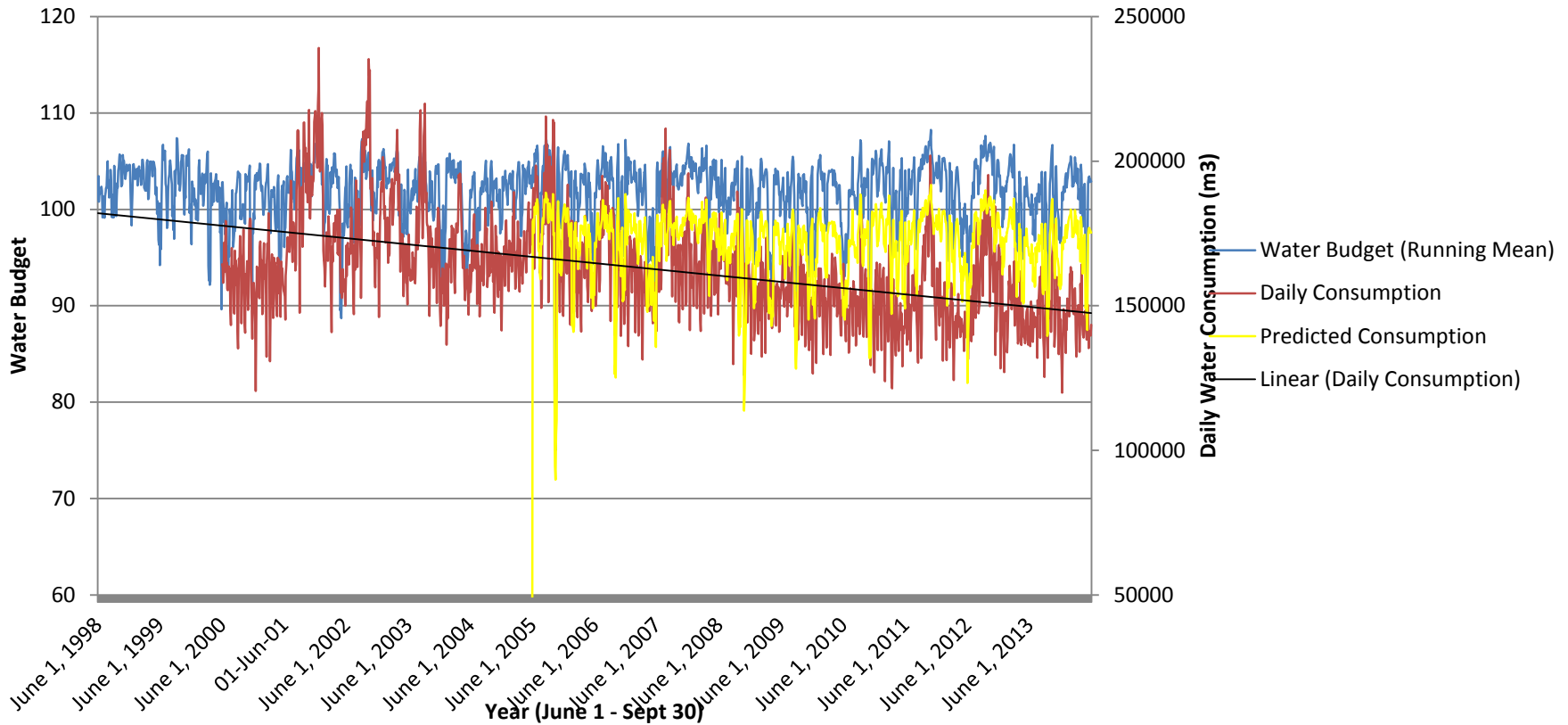
Peaking Factor Of Daily Water Demand



Peaking Factor of Monthly Water Demand



Actual versus predicted Water Use – Waterloo Region



- Water Budget is estimated evapotranspiration then subtracting the 5-day running mean of regional precipitation. The value of 100 was added to the difference to avoid negative values for days where P was greater than ET
- Predicted Consumption = correlation between the Water Budget and Daily Consumption between June 1, 2000 – Sept 30, 2004

Estimated Water Savings, Conservation By-Law

Year	Actual Water Consumption (m3) June-Sept	Predicted Water Consumption (m3) June-Sept	Difference (m3)	% Difference
2005	20917147.6	20868688.1	-48459.48035	-.23%
2006	19938806.32	20763751.8	824945.5019	3.97%
2007	20568336.44	21634482	1066145.584	4.93%
2008	19315377.84	20348699	1033321.143	5.08%
2009	18612760.84	20624383.7	2011622.82	9.75%
2010	18110192.5	20669436.7	2559244.155	12.38%
2011	18613871.6	21240229.5	2626357.935	12.37%
2012	18954960.5	21201323.7	2246363.197	10.60%
2013	17925361.4	20658419.8	2733058.439	13.23%

Last Word

- ENFORCEMENT IS KEY!
- 3 students patrolling, educating, issuing warnings
- 4 by-law officers able to write tickets
- Average 250 warnings per year
- Average 5 charges per year
- Ongoing Advt. & Education

Questions?

