

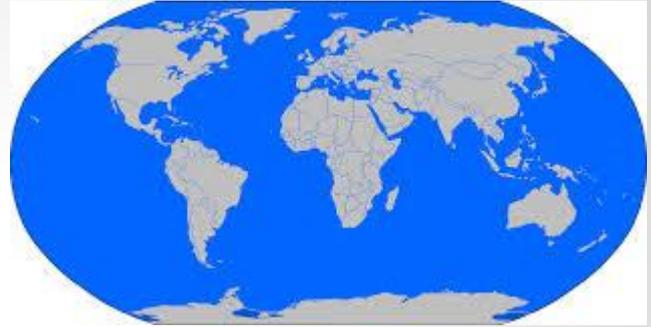


# Water Conservation / Efficient Fixtures

by Daria Trukhanova



# Water



Only 3% of Earth's water is freshwater

Slightly over  $\frac{2}{3}$  of that 3% is trapped in glaciers

# Conventional Water Use

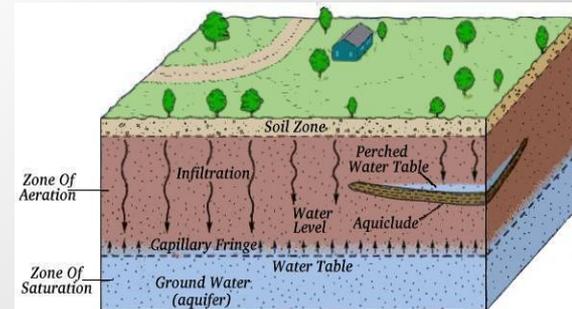
- NYS - 8.9 billion gallons of water are withdrawn every day from lakes, rivers, groundwaters of New York State

Typical pass-through system

Reduction of streamflow in rivers

Depletion of freshwater aquifers

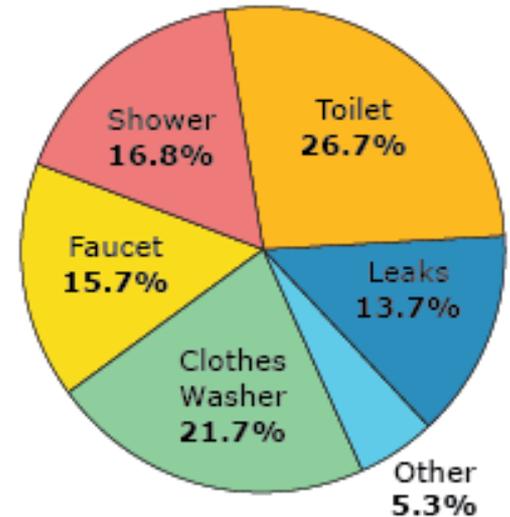
(underground layer of water)



# Water Use NYS

- Thermoelectric power 70%
- Public Water Supply 20%
- Industrial & Commercial 5%
- Agricultural 1% (2012 Water Use Report NYSDEC)

## How Much Water Do We Use?



Source: American Water Works Association Research Foundation, "Residential End Uses of Water." 1999

# Water Efficiency - Water Use Reduction

Water efficiency is the smart use of our water resources through water-saving technologies and simple steps we can all take.

Using water efficiently will help ensure reliable water supplies today and for future generations.



# Water Efficiency Strategies

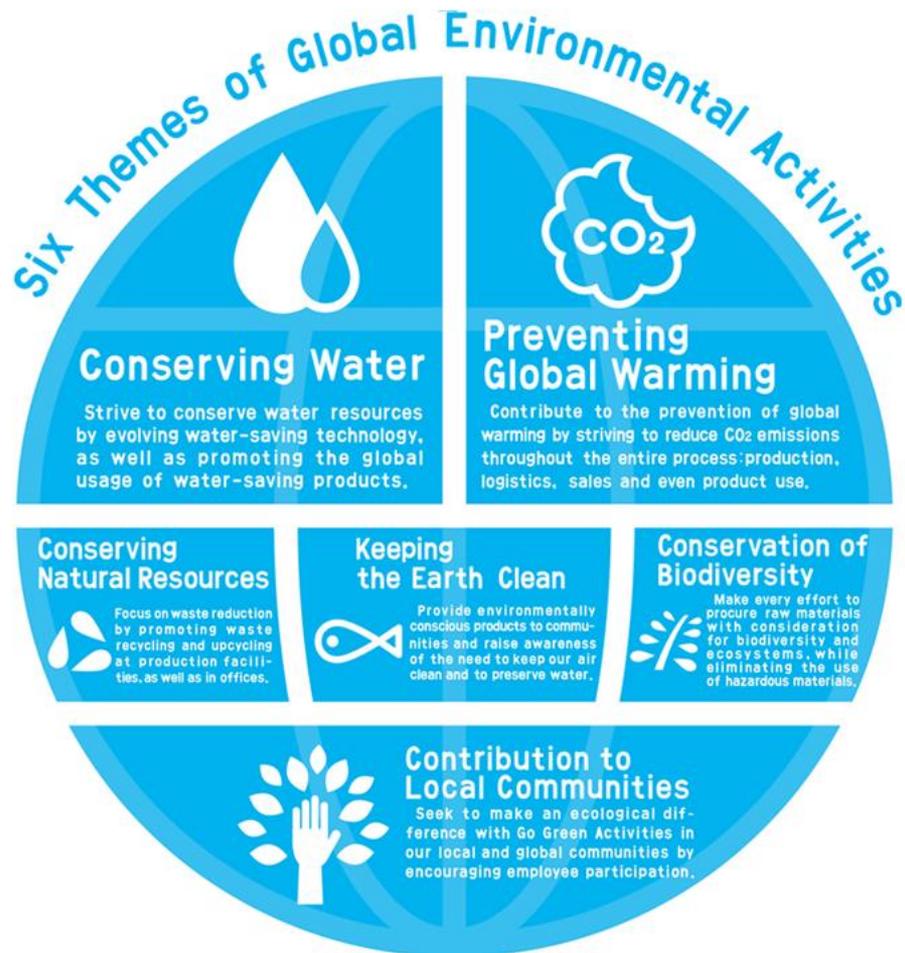
Water Efficient Fixtures

Water Metering

Alternative water sources

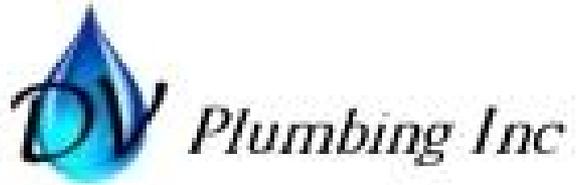
- Grey Water Reuse
- Rainwater harvesting

Reduce outdoor water use/Irrigation



# Research

Local Plumbing Company



Servicing Manhattan & Brooklyn areas

Interview with: James M Cook, LMP

# Projects by DV Plumbing Inc

65% - Residential New Installation

15% - Commercial New Installation

15% - Commercial Services

5% - Residential Services

# New Installation

Most of the newly installed fixtures are 1.28 GPF

However customers usually go not by the Fixture Efficiency but by the Fixture Appearance. Plumbers will be more happy to install 1.6 GPF toilets, as they are



American Standard 1.28 GPF

less likely to get complaints on the fixture flushing performance, as not all efficient fixtures perform as advertised.



TOTO Neorest 600 1.6 GPF

VS

# Services

Most of the services are done for the Commercial Office Management, Apartment buildings Management companies and Home owners.

Most of the buildings, except newly constructed will have inefficient fixtures, such as toilets with 1.6GPF. Certain homes will have 3.5 GPF

Does it make sense for the Building Owner, tenant to buy and install New Efficient Fixtures?

# Fixture History

**A standard (pre-1980) toilet uses:**

4.5 - 7.0 gallons per flush

**1980s vintage toilet (1980 - 1992) uses:**

3.5 gallons per flush

**A low-consumption toilet uses:**

1.6 gallons per flush (or less)

**High Efficiency Toilet (“HET”):**

1.28 gallons per flush



# Example 1: One Family Home (1 Persons). Average daily use (5) times

	Gal/Day	Gal/Month	Gal/Year
1.6GPF*5	8	240	2,920
1.28GPF*5	6.4	192	2,336
DF*5	6	180	2,190

## 1.6 VS DF Savings Per Year:

**730 Gals**

**\$3.58**

Investment of Installation \$150.00 of cheapest available Dual Flush toilet at Home Depot \$86.57 (Total Investment \$236.57) will pay back in 66 Years

## Example 2: One Family Home (2 Persons). Average daily use (5) times

	Gal/Day	Gal/Month	Gal/Year
1.6GPF*5	16	480	5,840
1.28GPF*5	12.8	384	4,672
DF*5	12	360	4,380

### 1.6 VS DF Savings Per Year:

**1,460 Gals**

**\$7.15**

Investment of Installation \$150.00 of cheapest available Dual Flush toilet at Home Depot \$86.57 (Total Investment \$236.57) will pay back in 33 Years

## Example 3: One Family Home (4 Persons). Average daily use (5) times

	Gal/Day	Gal/Month	Gal/Year
1.6GPF*5	32	960	11,680
1.28GPF*5	25.6	768	9,344
DF*5	24	720	8,760

### 1.6 VS DF Savings Per Year:

**2,920 Gals**

**\$14.31**

Investment of Installation \$150.00 of cheapest available Dual Flush toilet at Home Depot \$86.57 (Total Investment \$236.57) will pay back in 16 Years

## Example 4: Commercial Office for 120 Occupants

Toilet & Urinal 1.6 GPF

Male

Urinal (60\*2) \* 1.6 = 192 G

Toilet (60) \* 1.6 = 96 G

Female

Toilet (60\*3) \* 1.6 = 288 G

Toilet 1.28 & Urinal 0.9 GPF

Male

Urinal (60\*2) \* 0.9 = 108 G

Toilet (60) \* 1.28 = 76.8 G

Female

Toilet (60\*3) \* 1.28 = 230.4 G

Total Gallons per day: 576 G

Total Gallons per year: 210,240 G

Total Gallons per day: 415.2 G

Total Gallons per year: 151,548 G

**Savings in Gallons of Water per year: 58,692 Gallons**

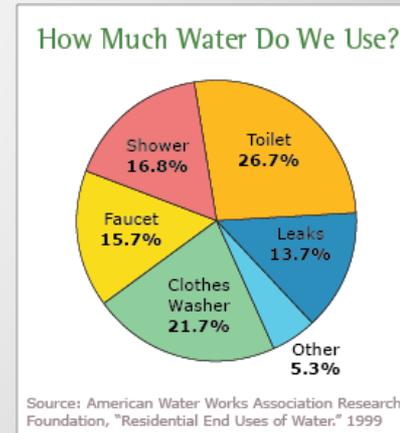
**Savings in Water Bill per year: \$287.59**

# Toilet water consumption per day in New York State

8.9 Billion gallons of water withdrawn every day from lakes, rivers and groundwaters of New York State

20% of 8.9 Billion gallons of water withdrawn every day is 1,780,000,000 Gallons - which is Daily Public Water Supply (2012 Water Use Report NYSDEC)

26.7% of 1.78 Billion Gallons is used for toilets, which is 475,260,000 Gallons per day (475 M)



# Savings

**1 Person Can save: 2 Gallons/day & 730 Gallons/year**

10 Person Can save: 20 Gallons/day & 7,300 Gallons/year

100 Person Can save: 200 Gallons/day & 73,000 Gallons/year

100,000 Persons Can save: 73M Gallons/year and 200,000 Gallons/day which is 0.042% of 475M gallons of daily water supply on toilets in New York State

472,621 Staten Island Population (2013) Can save: 345M Gallons/year, 945,242 Gallons/day which is 0.2% of 475M gallons of daily water supply on toilets in New York State

**8.406 M New York City Population (2013) Can save: 6.14 Billion Gallons/year, 16.8 M Gallons/day which is 0.35% of 475M gallons of daily water supply on toilets in New York State**

**Thank you**

