



# Water Conservation and Cost Management

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2012

- ❖ Think about water/sewer costs as “Dollars Per Apartment Per Year” so you can compare a building to any kind of flat-rate bill
- ❖ DEP meter bills are in HCF (Hundred Cubic Feet) Units 1 HCF = 748 gallons
- ❖ Average indoor water use is 65-75 gallons per person per day (\$278-\$321 per person per year). Efficient homes use less (40-50 gallons per person per day, \$171-\$214)

- ❖ How much does the building use? (Metered costs as \$ per apartment per year)
- ❖ How does that compare with the MCP \$894.15 per apartment per year?
- ❖ Is metered use above 0.34 HCF per apartment per day (consumption equivalent of \$894.15 per apartment per year)?
- ❖ How can I make my building more water-efficient?
- ❖ What do I need to do to qualify for MCP?

# Automated Meter Reading



- ❖ Advanced Metering Infrastructure (“AMI”) or simply Automated Meter Reading (“AMR”)
- ❖ Leveraging citywide rooftop-based wireless network
- ❖ Customer Benefits:
  - Reduce estimated bills and customer complaints
  - Early notification of leaks
  - Monthly bills (future)
  - Readings four times a day or hourly
  - Readings available via website
- ❖ Visit [nyc.gov/dep](https://nyc.gov/dep) for more information

## How to View and Monitor Your Water Consumption

## My DEP Account and Online Bill Pay

### **Did you know that My DEP Account allows you to:**

- ❖ Save money by monitoring and managing your daily water use
- ❖ Quickly detect costly leaks
- ❖ View and pay your bill online
- ❖ Go green and sign up for paperless billing
- ❖ Track the status of a billing dispute
- ❖ View your payment history

# How to Access your My DEP Account

Visit [nyc.gov/dep](http://nyc.gov/dep) and click the blue “My DEP Account and Online Bill Pay” button located in the top right corner of the page

The screenshot shows the NYC DEP website interface. At the top, there is a navigation bar with links for Search, Email Updates, Contact Us, Residents, Business, Visitors, Government, and Office of the Mayor. Below this is a banner for "New York Watershed in Winter" featuring the Rondout Reservoir. The main content area includes a search bar, social media links for Facebook, Flickr, and Twitter, and a "CUSTOMER SERVICES" menu with options like "Ways to Pay Your Bill" and "Account Information". A central article titled "DEP Expands Leak Notification Program to Include Large Residential Buildings" is displayed, featuring a bar chart showing water usage before and after a leak was fixed. A yellow arrow points to a blue button labeled "My DEP Account and Online Bill Pay" in the right-hand sidebar, which also contains links for "How to Get Started", "Reservoir Levels", "Paperless Billing", "Leak Notification", "Summer Internship", "Waterbody Advisories", "Green Infrastructure", "Natural Gas Drilling", and "Find Forms".

**Usage for period from 02/17/11 to 02/28/11**

Date	Usage (Gallons)
02/17	~100
02/18	~100
02/19	~100
02/20	~100
02/21	~100
02/22	~100
02/23	~100
02/24	~100
02/25	~100
02/26	~100
02/27	~100
02/28	~100

**During Leak**  
Consumption skyrocketed to 2,500 gallons - \$26/day

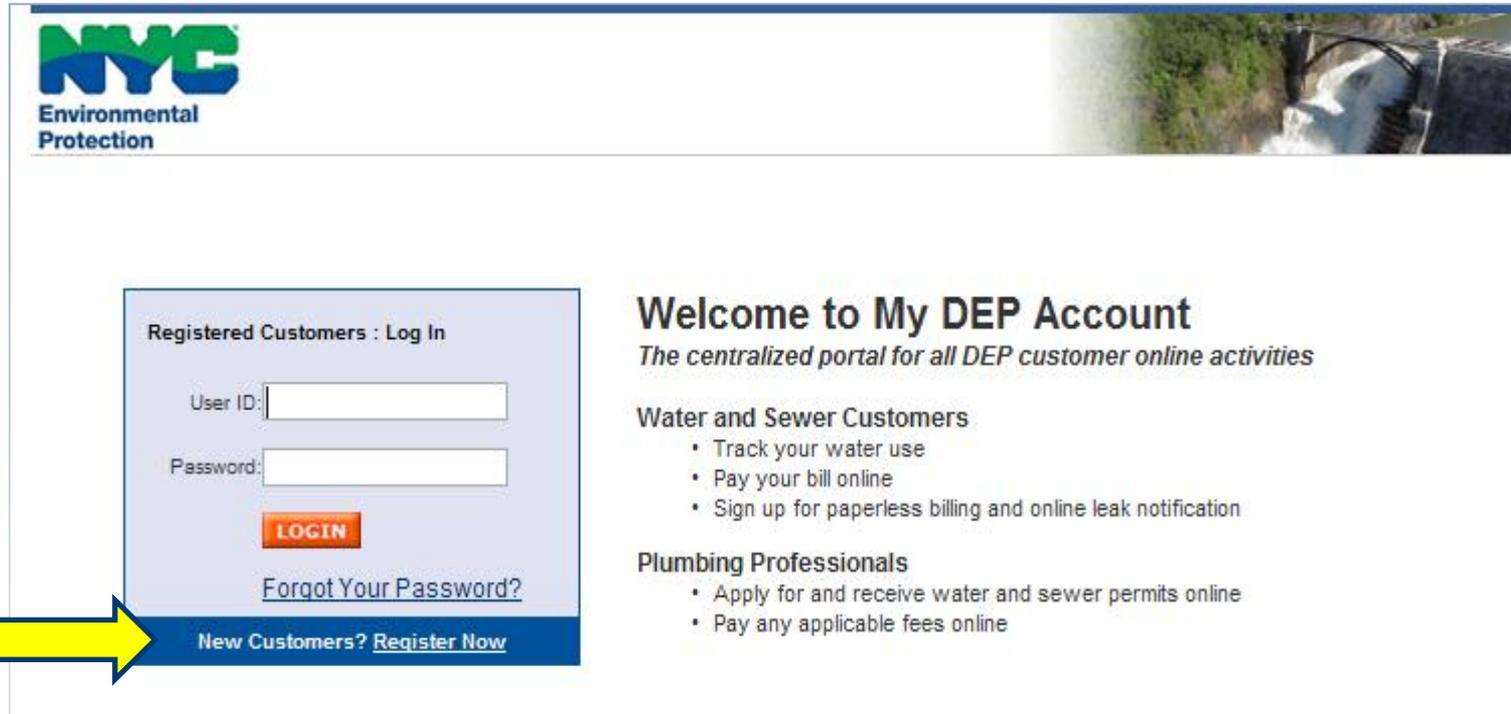
**After Leak fixed**  
Consumption reduced to avg. 150 gallons - \$1.50/day

**DEP Expands Leak Notification Program to Include Large Residential Buildings**  
Environmental Protection Commissioner Carter Strickland today announced the expansion of DEP's highly successful Leak Notification Program to include large residential building owners. The expanded Leak Notification Program will proactively notify large building owners of potential leaks and enable the owners and managers to quickly respond to and fix them before they become a costly problem. This program is made possible by the city's \$252 million investment in wireless meter readers, which

# How to Create your My DEP Account

Log in to your **My DEP Account** by entering your User ID and Password

New to **My DEP Account**? Just click the “Register Now” link and follow the instructions



**NYC**  
Environmental  
Protection

Registered Customers : Log In

User ID:

Password:

**LOGIN**

[Forgot Your Password?](#)

New Customers? [Register Now](#)

## Welcome to My DEP Account

*The centralized portal for all DEP customer online activities*

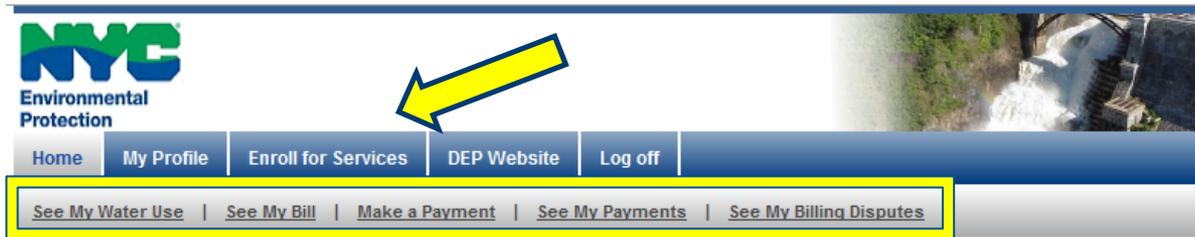
### Water and Sewer Customers

- Track your water use
- Pay your bill online
- Sign up for paperless billing and online leak notification

### Plumbing Professionals

- Apply for and receive water and sewer permits online
- Pay any applicable fees online

Manage your **My DEP Account** by clicking on one of the tools located at the top of your screen



## Welcome to My DEP Account

In order to see your water use online you must have an **AMR (Automated Meter Reading)** device installed on your water meter.

**Step 1: Please select your account number below.**

Account No:

**Step 2: Please select a service above.**

### What is Automated Meter Reading (AMR)?

AMR is a system of small, low-power radio transmitters connected to individual water meters that send readings to a network of rooftop receivers throughout the City. This new technology will help you know more and save more when it comes to your water use. By tracking your water use daily, weekly, monthly, and yearly, you can quickly be alerted to potential leaks so you can fix them before they become a billing problem. All meters in the City will have AMR technology installed. This project began in March of 2009 and will continue over the next three years.

### Why Go Paperless?

Going paperless is the most environmentally friendly way to get your quarterly water bill. Instead of receiving a paper bill in the mail, you'll get an email notification when your next bill is due. You can then log in to My DEP Account to see an electronic copy of your bill. By viewing your statements online you'll save time and paper.

### Why Pay Your Bill Online?

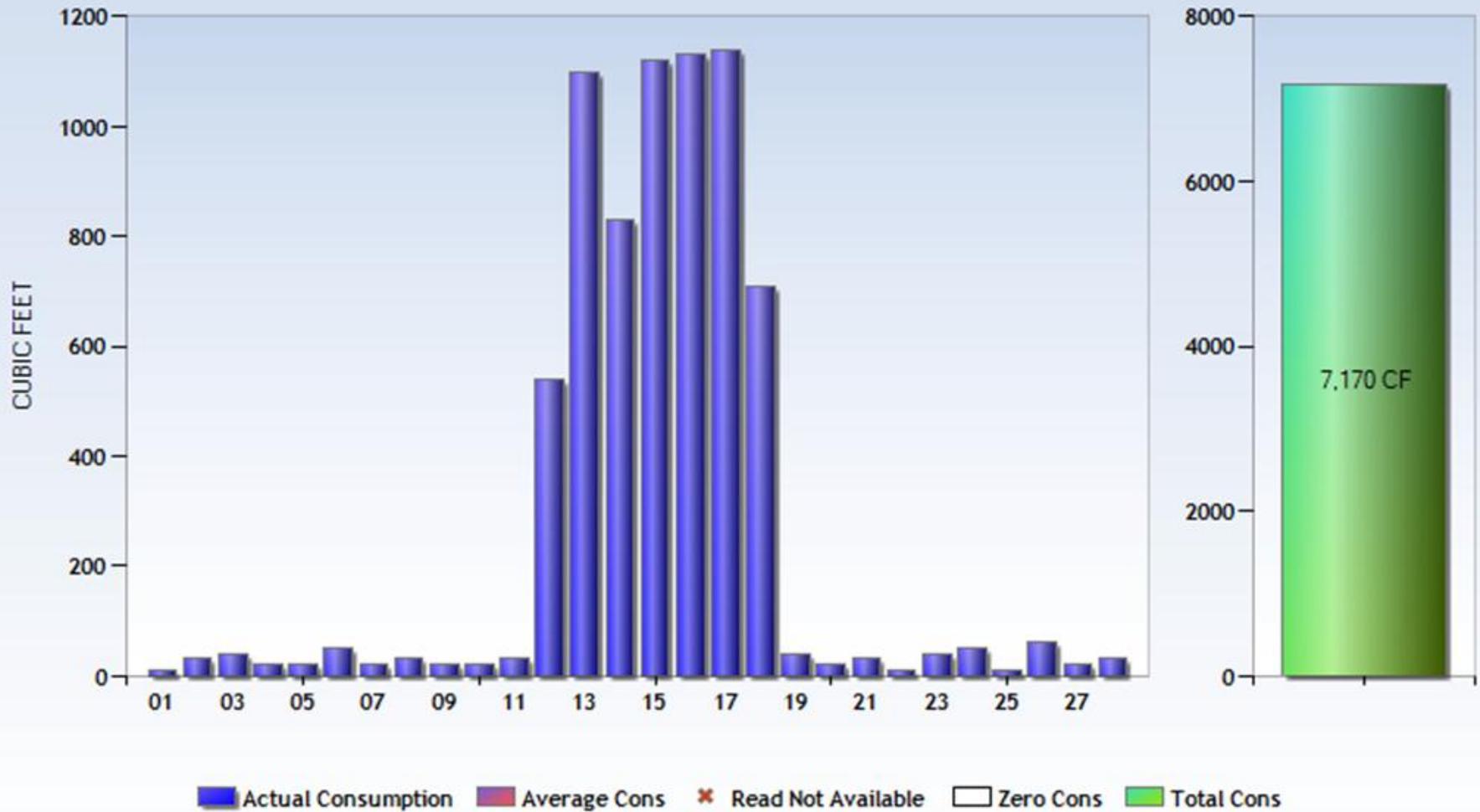
Paying your bill online is fast, easy, and convenient. Instead of sending a check in the mail or paying in person, you can simply login to My DEP Account and pay online any time. No stamps or envelopes and no standing in line. You can even get a 2% discount on your water and sewer bill when you sign up online for direct debit. [Click here to learn more.](#)

### What are Leak Notification Alerts?

DEP will automatically send registered customers an alert if we detect a dramatic increases in daily water use. This tool allows you to react quickly to sudden changes in consumption that could indicate a potential leak. Instead of waiting months for your next water bill, you'll be alerted to a leak the next day. This means you can catch and fix the leak before it becomes a billing problem. All Tax Class 1 properties are automatically enrolled in the program. Owners must manually enroll their Tax Class 2 property by clicking on the "Enroll for services" tab and selecting the "Leak Notification" link at the top of the page. Tax Class 1 customers can unenroll from the program by following the same steps.

# Detect Costly Leaks

### Daily usage for February 2011

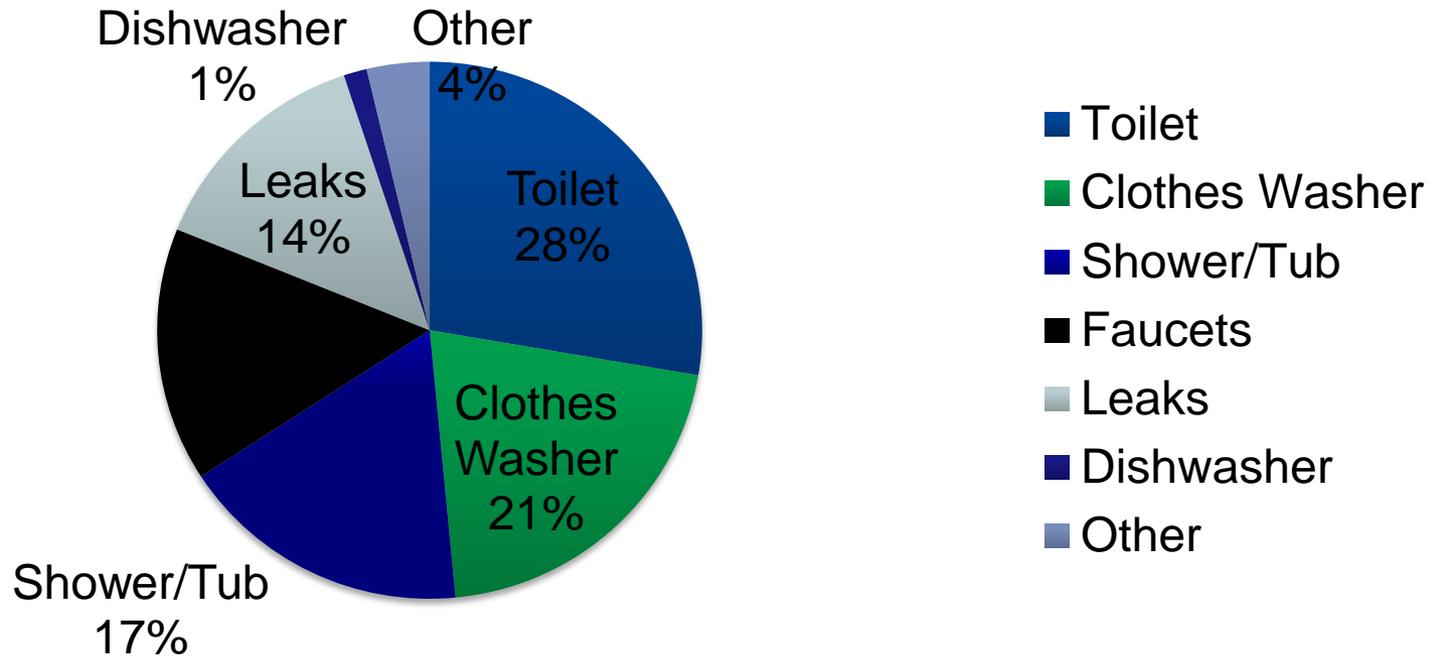


- ❖ Increasing trend over weeks
- ❖ Significant overnight use – overnight use should be very low in a low-leakage building
- ❖ Note new vacancies and new occupants
- ❖ Maintain data on
  - Gallons per day per apartment (total apartments)
  - Gallons per day per apartment (occupied apartments)
  - Gallons per day per person (if you have a good idea of the number of people)

# How Much Should We Be Using?

- ❖ 70 – 80 gallons per person per day without water-saving fixtures (9 – 10 CF per person per day)
- ❖ Less than 60 gallons per person with water-saving fixtures (8 CF per person)
- ❖ If you're using 100 gallons per person or more “alarms” should go off (13 CF per person)
- ❖ All numbers are approximate

# Indoor Water Use in the “Standard” Use Home



# “Standard” v. “Efficient” Home

## Gallons Per Person Per Day

End Use	Standard	Efficient	Technologies
Toilets	20.1	5.1	High Efficiency Toilets
Clothes Washer	15.1	10.6 or less	CEE Tier 3
Showers	12.6	5 – 10	< 2.5 gpm showerhead
Faucets	11.1	7 – 10.8	< 2.0 gpm
Dishwasher	1.0	0.5 – 1.0	CEE
Leaks and Other	12.7	< 7,7	Monitoring
Total	72.5	36 - 42	

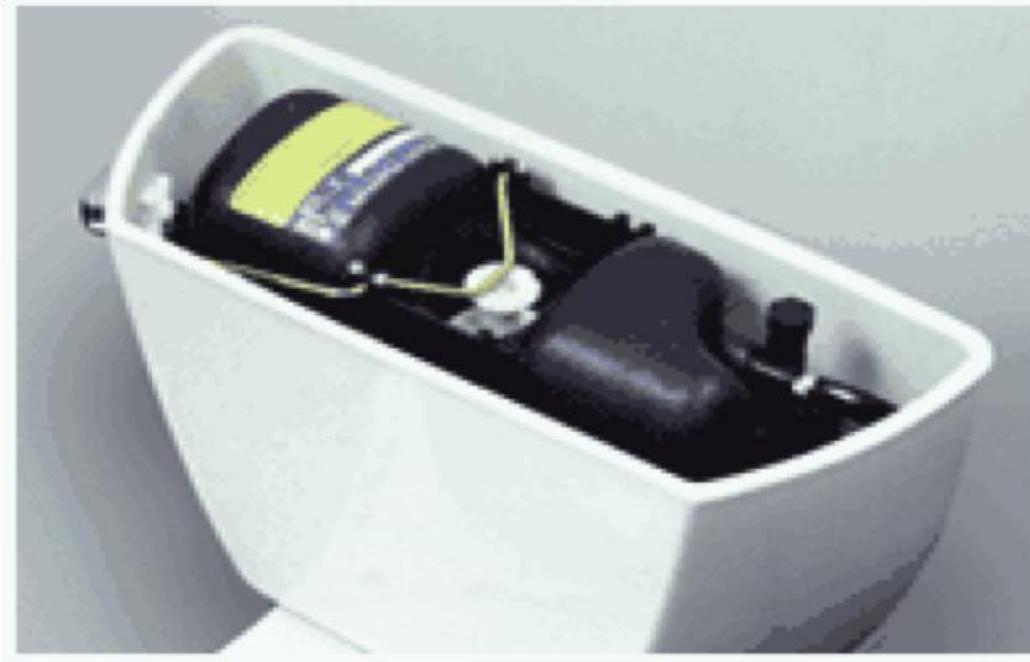
- ❖ National standard of 1.6 gpf is being informally superseded by 1.28 gpf: High Efficiency Toilets (“HET”)
  - Gravity 1.28 gpf
  - Gravity Dual-flush 1.6 gpf/0.8 – 1.0 gpf
  - Pressurized 1.0 – 1.28 gpf
  - Commercial 1.0 gpf, 1.28 gpf and Dual Flush
- ❖ As of July 2012, NYC Local Law requires the installation of 1.28 gpf as a part of new construction



- ❖ 1.28 gpf maximum flush volume
- ❖ Minimum 350 grams MaP test score for flush performance
- ❖ Requires use of pilot fill valve (no ballcock type valve)
- ❖ Design must not allow adjustment of the fixture to flush above 1.68 gpf (single flush fixtures) or 1.40/2.00 for dual flush fixtures
- ❖ Requirement by Local Law starting 7/2012

- ❖ Pressurized fixtures flush at less than 1.28 gpf, i.e. 1 gpf
- ❖ Some fixtures have flushing performance that exceeds 350 grams on the MaP test – requires comparing the WaterSense list with MaP scores to learn which products exceed 350 grams

# Pressurized-Tank Toilet



- ❖ “Maximum Performance” flushing test using realistic test media developed in 2005 for several water utilities who wanted a more reliable measure of toilet flush performance
- ❖ Flushing 250 grams of media is considered a “passing” grade although WaterSense and some utilities prefer to use 350 grams. Many toilets can clear far more and pressurized fixtures usually flush more than 1,000 grams
- ❖ 250 grams based on clinical data of human waste production
- ❖ If a manufacturer has not submitted a product for MaP testing that should be taken as a sign of lack of confidence in the product. “If it’s not on the MaP, don’t go there”

# Dual Flush or Single Flush?

- ❖ Data is inconclusive about the amount of incremental savings from dual flush fixtures
  - ❖ Average flush volume varies from 1.0 – 1.1
  - ❖ Are the residents “environmentally conscious?”
  - ❖ Is education part of the goal?
  - ❖ Research the specific product. Toilets with a “wash down” type design may often flush solids at the “half flush” while this is less likely for “siphonic” toilet designs
- 
- [http://www.cuwcc.org/products\\_tech.lasso#HETs](http://www.cuwcc.org/products_tech.lasso#HETs)
  - <http://www.epa.gov/watersense/>
  - <http://www.toiletflapper.org/>

- ❖ Modest retrofit reductions (1 gallon per flush) are possible from existing nominal 5 gpf toilets
- ❖ ***Toilet leaks are the largest single source of leaks – and the one most often missed***
- ❖ Alternate refill devices are available that protect against “silent” toilet leaks

## Repair Your Leaking Toilets: *Save Water and Stop Flushing Away Your Water Bill*

High water bills are often caused by leaking toilets that waste large amounts of water.

Size of Leak	Amount of Water Waste Per Day	Approximate Cost of Waste Per Day
Small	30 gallons	\$0.25
Medium	250 gallons	\$2.30
Large	Up to 4,000 gallons	As much as \$40

The diagram below illustrates the parts of a toilet. Most water waste is caused by a leaking flapper or a faulty fill valve that stays open. An open fill valve can have water flowing through it at a rate of three to five gallons per minute or 4,000 gallons a day. If you can hear your toilet running loudly, it means you could be wasting large amounts of water. Even if you have a small leak, it is worth the money and time to make necessary repairs.

### WHAT CAUSES A TOILET LEAK?

- The flapper becomes warped or damaged and does not provide a watertight seal on the flush valve. In-tank toilet cleaners can cause flapper damage.
- The flapper, trip lever or chain may lose its alignment with the flush valve, leaving a gap that can cause a leak.
- The flush valve can develop small cuts or other damage that causes a leak between it and the flapper. This is usually caused by grit or sediment.
- The fill valve can become stuck in an open position causing water waste as it flows down the overflow tube. This can happen when your water pressure changes in your home.

### THE TOILET THAT LEAKS WHILE YOU SLEEP

Toilet leaks are often frustrating because they can be intermittent and hard to detect. If you have a toilet that uses a float ball-style fill valve similar to the one in the diagram, higher water pressure overnight in your building or neighborhood can cause the float ball to open and stay open until the pressure decreases. This could cause a leak while you are sleeping.

# Dye Tablets for Toilet Leak Detection



# In-Tank Chlorine Cleaners



- ❖ Flapper chain gets tangled and holds flapper open slightly: Adjust so that chain is no longer than necessary
- ❖ Sediment scores flapper seat or builds up (clean)
- ❖ Refill valve (ball cock type) goes out of adjustment so water level is never reached before overflow occurs: Move adjustment screw slightly or bend ballcock arm slightly downward

# Alternative Refill Devices



- ❖ Fluidmaster “Leak Sentry” does not refill tank if there’s a leak – limits loss to one tank
  - You must flush twice at next use: Once to refill the tank and once to flush the toilet
  
- ❖ MJSI “HydroClean” emits a whistling sound if there’s a toilet leak

# Displacement Products



# Replacement Flapper



- ❖ Pressure spikes or debris in water can cause “phantom flushes” or leaking valve
- ❖ Shutting water supply to building or valve can cause valve to unseat and turning water back on can result in valve remaining open – potential 35 gpm
- ❖ Always exercise flushometer valves after water is turned off and then turned back on



- ❖ Consortium for Energy Efficiency (“CEE”) sets three tiers of energy and water efficiency performance
- ❖ Water Factor = Gallons per Cubic Foot Capacity

Standard	Water Factor
Energy Star	8.0
CEE Tier 1	7.5
CEE Tier 2	6.0
CEE Tier 3	4.5

- ❖ [www.cee1.org](http://www.cee1.org)
- ❖ Also has water-oriented specs for dishwashers and commercial kitchen equipment in addition to energy specs

- ❖ Maximum 1.5 gpm at 60 psi; Minimum 0.8 gpm at 20 psi
- ❖ Complies with NSF61 (“no lead” alloy)
- ❖ Commercial faucets available at 0.5 and 1.0 gpm along with 15-second duty cycles

- ❖ Current standard 2.5 gpm at 80 psi
- ❖ Local Law requires 2.0 gpm 7/1/2012
- ❖ If low pressure conditions exist, specify “pressure compensating”
- ❖ Constant temperature shower valves important
- ❖ If trying for less than 2 gpm, consider a hand-held showerhead

- ❖ Old condensate return lines can leak, losing water and energy
- ❖ If the return lines are more than 20 years old, consider a water meter to monitor losses on the makeup boiler water line
- ❖ Condensate pipes may be leaking behind walls or under the basement floor

- ❖ Indicated by significant night time water use
- ❖ Caused by float valve failure
- ❖ Roof tank should be inspected and maintained annually

# Washing the Sidewalk

## Waterbroom



## Watersweeper



- ❖ Whenever possible, install owner submeter for commercial tenants and make sure they are obligated to pay their share of water/sewer costs
- ❖ Most important if the tenant is in a food-related, health-related or other water-using business
- ❖ Once-through water-cooled equipment is a common source of major use and leaks

# The Submetering Debate

- ❖ American Water Works Association Research Foundation study indicates 15% savings over simply passing along water/sewer costs
- ❖ Users should pay for what they use at every level
- ❖ Without submetering owners are subsidizing waste by tenants
- ❖ Submetering would reduce rents for most apartments

- ❖ Submetering would have to be performed by private companies working for the owner – utilities have no legal relationship with tenants
- ❖ Consumer protection rules and oversight of submetering companies would be required
- ❖ Owners would no longer have a financial incentive to fix leaks unless building structure is effected
- ❖ In New York, rent regulation would have to be revised (as it was for individual electric metering)
- ❖ Many submetering technologies do not allow tenants to read their own meters
- ❖ Major change required in plumbing design of apartment buildings

- ❖ Education by co-op board and tenant organizations should be aimed at understanding that:
  - Wasting water leads to higher housing costs
  - Water is not “free” even if they do not pay for it directly
  - Report leaks to building management and if they do not act, to HPD and DEP
  
- ❖ Turn the following into negative images:
  - Defrosting food under running water
  - Flushing a tissue down the toilet

- ❖ DEP web site: [www.nyc.gov/dep](http://www.nyc.gov/dep)
  
- ❖ Billing Issues: (718) 595-7000 or write:
  - BCS Correspondence Unit, NYC Department of Environmental Protection, 59-17 Junction Blvd., 7<sup>th</sup> Floor, Flushing, NY 11373-5107
  
- ❖ Water Efficiency Resources:
  - ❖ [www.allianceforwaterefficiency.org](http://www.allianceforwaterefficiency.org)
  
- ❖ Energy Efficiency Resources: [www.getenergysmart.org](http://www.getenergysmart.org)