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## Water Conservation BMPs:

### High Efficiency Clothes Washers (HEWs) and Ultra Low-Flush Toilets (ULFTs)



RWSPG Meeting  
April 22, 2008



## Clothes Washer Rebates and Toilet Replacement

# Presentation Overview

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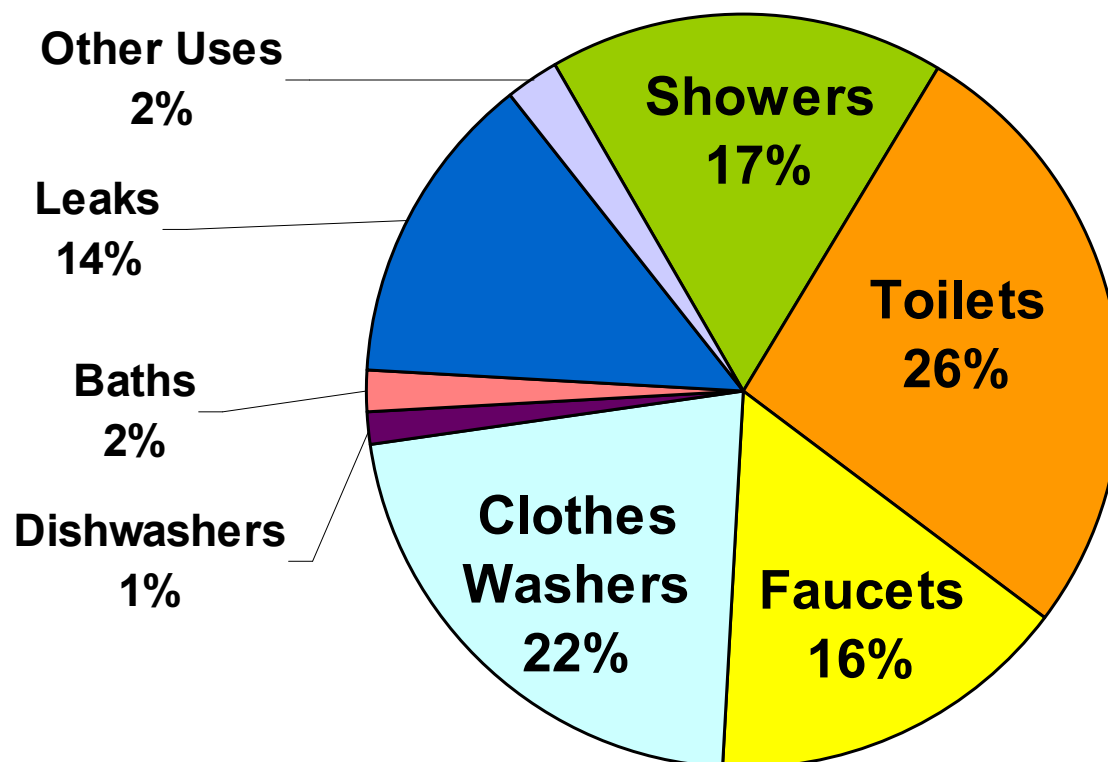
- Water-use Recap
- High Efficiency Clothes Washer Rebate Program
- Residential Ultra low-flush Toilet Replacement Program
- Examples
- Sample Recommendation Statements

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## Daily Residential Indoor Water Use



Residential End Uses of Water, Mayer, et. al. 1999

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# High Efficiency Clothes Washers (HEWs)



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# High Efficiency Clothes Washers (HEWs)

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## Conventional Washers

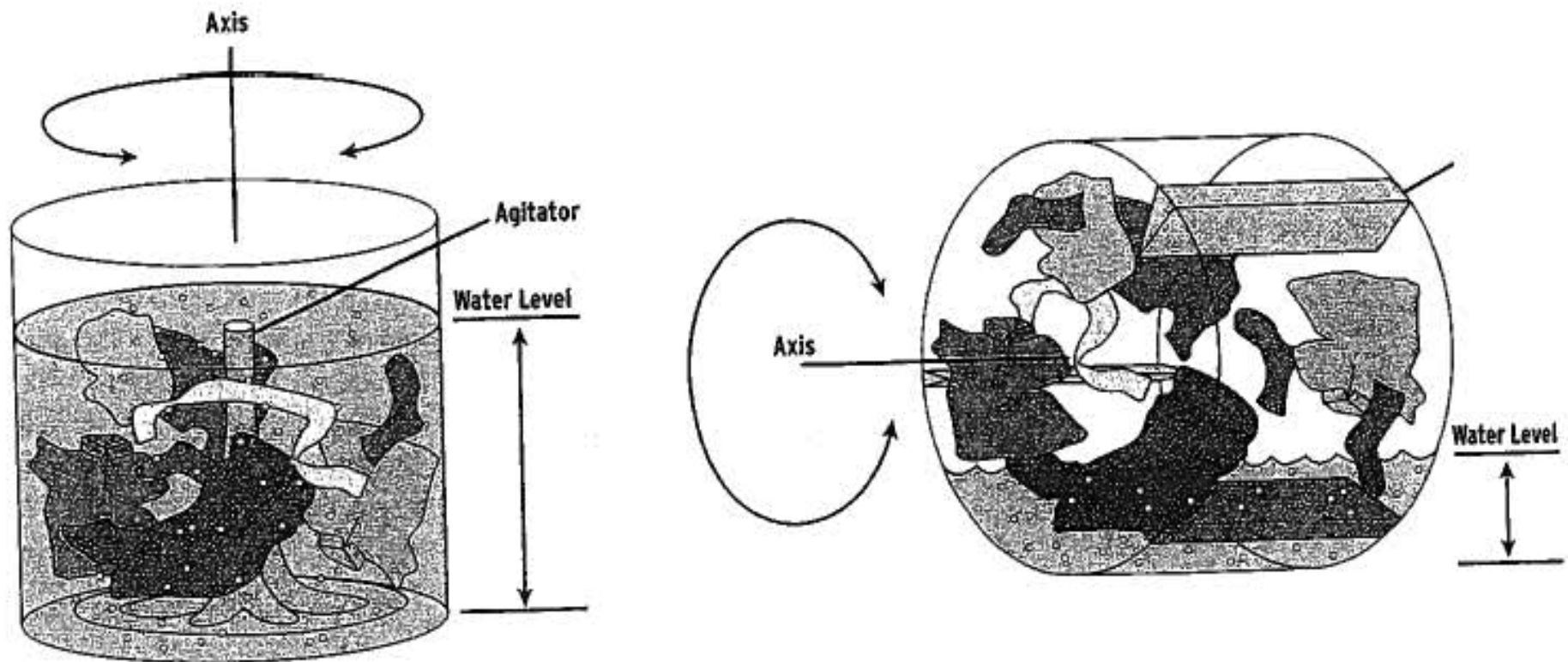
- 39 gallons per load
- Top loaded
- Vertical axis
- Performance Standard
- Cost: \$300-\$700

## High Efficiency Washers

- 27 gallons per load
- Front loaded
- Horizontal axis
- Equal or better Performance
- Faster spins-Less energy
- Automatic water level adjustments
- Cost: \$600-\$1,100

# Vertical Axis vs. Horizontal Axis

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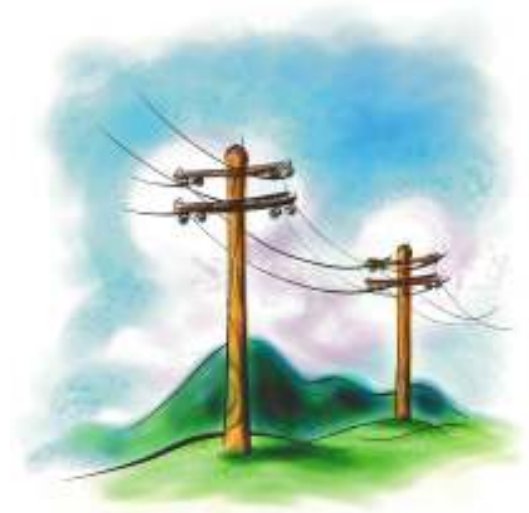
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## High Efficiency Clothes Washers Savings

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- **Water** (35%-50% reduction)
  - 4.4 gallons a day
  - 31 gallons a week/1,621 gallons a year (per person)
- **Energy** (40%-50% reduction)
  - 0.5 kWh per day
  - 3.5 kWh per week/192 kWh per year (per person)
- **Avoided Costs**
  - Water/Sewer Costs
- **Money**
  - \$80-\$100 annual (water, energy, detergent) 2-4 year payback
- **Detergent/Clothes**
  - HE detergents-less suds

## High Efficiency Clothes Washers

# Rebates/Funding Options

### **REBATES:**

- Residential
  - \$75-\$230; tax/bill credits
- Commercial
  - Higher rebates; tax/bill credits
- Pre-Approved list of models



### **FUNDING SOURCES:**

- Water, electric, and/or gas utility
  - California, Florida, Iowa, Massachusetts, New Jersey, New York, Oregon, Texas, Vermont, Washington, Wisconsin



# In the News.....ENERGY STAR

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- Modified Energy Factor (MEF)
  - Cubic feet per kWh per cycle
  - Capacity divided by energy consumption
  - Higher MEF, more efficient
- Water Factor (WF)
  - Gallons per cycle per cubic feet
  - Water consumption divided by capacity
  - Lower WF, more efficient

	Jan 2007	July 2009	Jan 2011
Energy Star Criteria	MEF $\geq 1.72$ WF $\leq 8.0$	MEF $\geq 1.8$ WF $\leq 7.5$	MEF $\geq 2.0$ WF $\leq 6.0$

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# Recycle Old Machines

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- Steel content-45 pounds
- USEPA-Benefits for using recycled scrap
  - 97% reduction in mining wastes
  - 90% savings of virgin materials
  - 86% reduction in air pollution
  - 76% reduction in water pollution
  - 74% savings in energy, 40% reduction in water use

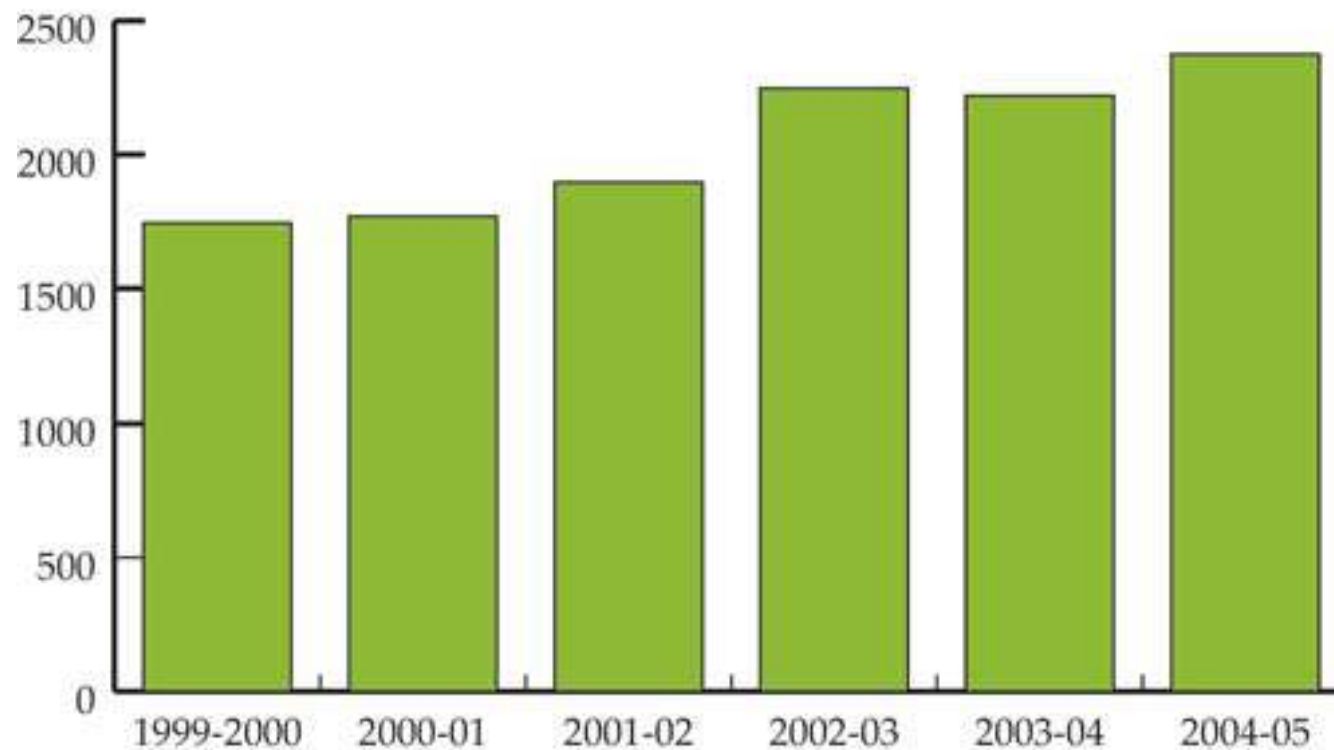
# Austin, Texas

- **Washwise Program**
- **First DOE local ENERGY STAR partner**
- **\$100 Rebate (\$50-Water, \$50-Energy)**
- **Commercial/Multifamily**
  - **up to \$250 (\$150-Water, \$100-Gas)**



# City of Austin

## Residential Washer Rebates Issued



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# Portland

- Posh Wash Laundromat
- 50 HEWs
- Savings of 20 gallons/load
- Savings of \$5,550 a year
- Tax Credit of \$5,740
- 1.5 million

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# High-Efficiency Models

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- Over 100 models to choose from:
- Kenmore
- LG Appliances
- Frigidaire
- GE
- Whirlpool
- Bosch



## **Sample Recommendation Statement**

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## High Efficiency Clothes Washers

# Sample Recommendation Statement

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- Implement a high efficiency clothes washer financial incentive program in partnership with local utilities. The program should also include recycling options for old machines.
- Rebate, Tax credit, Bill credit, etc
- State, county, local



# Ultra Low-Flush Toilets (ULFTs)

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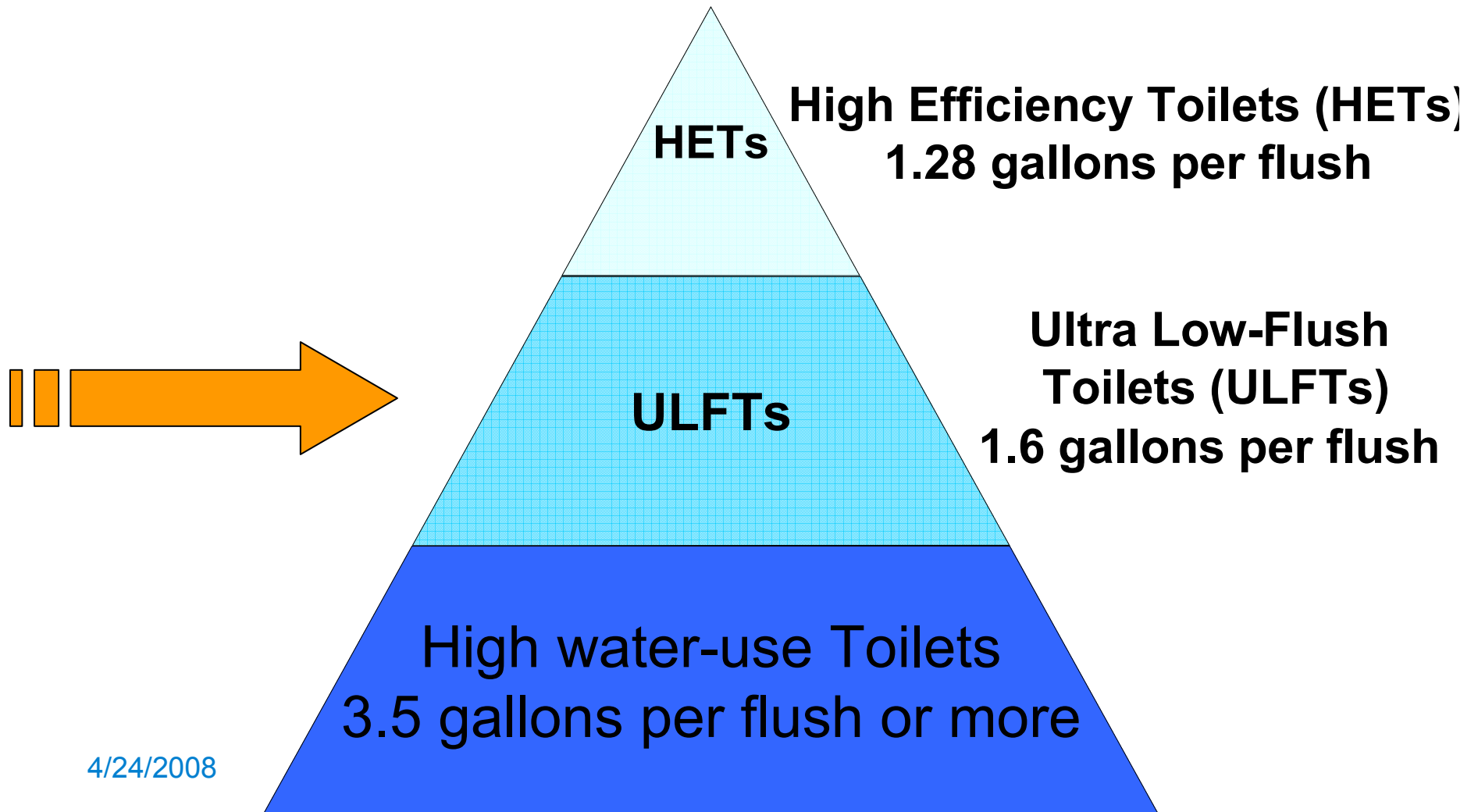


**“Toilets flush in E flat.”**

Source: [www.uselessfacts.net](http://www.uselessfacts.net)

# Three Tiers of Toilets

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# Ultra Low-Flush Toilets (ULFTs)



- Gravity Tank
  - 80% sold in US

- Dual Flush
  - Gaining in marketplace



- Flushometer Tank (Pressurized)/ Valve
  - Direct connection to waterline

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## Ultra Low-Flush Toilet Replacement

# Water Savings

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By replacing one 3.5 gpf toilet with a 1.6 gpf toilet:

- **Residence**
  - 9.7 gallons per capita per day, 25.6 gallons per household per day
  - 3,537 gallons per capita per year, 9,337 gallons per household per year
- **Office**-20 gallons per day
- **Hotels**-16 gallons per day
- **Retail**- 37 gallons per day
- **Restaurant**- 47 gallons per day

The background of the slide is a collage of US dollar bills, primarily \$100 bills, featuring the portrait of Benjamin Franklin. The bills are arranged in a way that they overlap and are slightly faded, creating a textured, financial-themed background.

# Replacement Program

- Target your potential participants
  - REBATES, water bill credits, fixture giveaway
- Purchasing information/Approved List
- Installation Guidance/Assistance
- Rebate application
- Inspection Process
- Timely rebate turnaround
- Evaluation and Reporting program results
- Education Opportunity

# Let's Talk Economics

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- Water Utilities
- Price of ULFT is comparable to conventional toilet
- Cost of professional plumber to install (\$50-\$125)
  - Sometimes technicians can be used
- Cost of disposing old toilet
- Lifecycle of toilets(10-15 years)
- Big or small Program

# Recycle the Old Toilets

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- Large scale programs
- Burden on environment and costly
- Crush porcelain (bowls and tanks) into road aggregate, building-material mix, artificial reefs
- Rubber, metal and plastic can also be recycled
- Cost



- Partnership Program similar to Energy Star Program
- Quality, water-efficient Products (label)
  - Toilets
  - Showerheads
  - Faucets
  - Landscaping
- Interactive games
- Water saving tips

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# Austin, Texas

- Free Toilet Program
- Toilet Rebate Program
- Installation Rebate
- Started in the 1990s
- Water savings-1.4 mgd
- Estimated savings of 29.3 gpd per toilet replaced
- \$2 million in costs from 1992-1999
- 95% satisfied with new toilet



# New York City

- NYC Dept. of Environmental Protection
- \$297 million rebate program
- Residential/Commercial
- 1994-1997
- Installation of 1.3 million 1.6 gpf toilets
- Water savings-70 million/day
- 53.8 gallons/day per toilet
- 29% reduction of water use by 67 apt. buildings





# Tampa and Los Angeles

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## TAMPA

- Installation of 15,300 toilets
- Rebate
- 1993-1999
- Water savings-0.44 mgd
- 29.1 gpd per toilet
- \$1.7 million
- 84-95% satisfaction

## LOS ANGELES

- Installation of 900,000 toilets
- Rebate and community-based funding
- Since 1990
- Water savings-28.7 mgd
- 31.7 gpd per toilet
- \$107 million (1990-2000)
- 80% satisfaction

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## **Sample Recommendation Statement**

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## Ultra Low-Flush Toilet Replacement

# Sample Recommendation Statement

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- Implement of program for replacing high-water using toilets with ultra low-flush(1.6 gallons or less) toilets for single family and multifamily residences with installation assistance.
- City
- County
- State
- A more aggressive option-HETs only

(1 of 3)

## Ultra Low-Flush Toilet Replacement

# Sample Recommendation Statement

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- Implement a free toilet (ULFTs or HETs) program with installation assistance for qualifying low-income families.
- City
- County
- State

(2 of 3)

## Ultra Low-Flush Toilet Replacement

# Sample Recommendation Statement

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- Implement a recycling component to both programs to ease the environmental impacts associated with toilet replacement

(3 of 3)



# Questions?

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