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

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

- Showers: 17%
- Toilets: 26%
- Clothes Washers: 22%
- Faucets: 16%
- Leaks: 14%
- Baths: 2%
- Dishwashers: 1%
- Other Uses: 2%

Residential End Uses of Water, Mayer, et. al. 1999
High Efficiency Clothes Washers (HEWs)
### High Efficiency Clothes Washers (HEWVs)

<table>
<thead>
<tr>
<th>Conventional Washers</th>
<th>High Efficiency Washers</th>
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<tbody>
<tr>
<td>• 39 gallons per load</td>
<td>• 27 gallons per load</td>
</tr>
<tr>
<td>• Top loaded</td>
<td>• Front loaded</td>
</tr>
<tr>
<td>• Vertical axis</td>
<td>• Horizontal axis</td>
</tr>
<tr>
<td>• Performance Standard</td>
<td>• Equal or better Performance</td>
</tr>
<tr>
<td>• Cost: $300-$700</td>
<td>• Faster spins-Less energy</td>
</tr>
<tr>
<td></td>
<td>• Automatic water level adjustments</td>
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<tr>
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<td>• Cost: $600-$1,100</td>
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Vertical Axis vs. Horizontal Axis
High Efficiency Clothes Washers

Savings

- **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

4/24/2008

Chicago Metropolitan Agency for Planning
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

- **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

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<tbody>
<tr>
<td>MEF ≥ 1.72</td>
<td>MEF ≥ 1.8</td>
<td>MEF ≥ 2.0</td>
<td></td>
</tr>
<tr>
<td>WF ≤ 8.0</td>
<td>WF ≤ 7.5</td>
<td>WF ≤ 6.0</td>
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</table>
Recycle Old Machines

• 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)
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
High-Efficiency Models

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

“Toilets flush in E flat.”
Source: www.uselessfacts.net

4/24/2008
Three Tiers of Toilets

- **High water-use Toilets**: 3.5 gallons per flush or more
- **Ultra Low-Flush Toilets (ULFTs)**: 1.6 gallons per flush
- **High Efficiency Toilets (HETs)**: 1.28 gallons per flush
Ultra Low-Flush Toilets (ULFTs)

- **Gravity Tank**
  - 80% sold in US

- **Dual Flush**
  - Gaining in marketplace

- **Flushometer Tank (Pressurized)/ Valve**
  - Direct connection to waterline
Ultra Low-Flush Toilet Replacement

Water Savings

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
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

• 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

• 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
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

**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
Sample Recommendation Statement
Ultra Low-Flush Toilet Replacement

Sample Recommendation Statement

- 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

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

• City
• County
• State

(2 of 3)
Sample Recommendation Statement

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

(3 of 3)
Questions?

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