

# Purchasing for Water Efficiency



**November 8, 2011**



# Questions?

**Please enter your questions at any time through the GoToWebinar box on the right-hand side of your screen.**

**We will use them during Q & A at the end.**



# Agenda

- Welcome and Introduction, **Phillip Kobernick**, Manager, Responsible Purchasing Network
- **Tara O'Hare**, Implementation and Recruiting Lead for WaterSense Program, US EPA
- **Cinnamon Black**, Water Conservation Specialist, Public Utilities, Raleigh, NC
- RPN's "Greening Existing Buildings" Initiative
- Q & A, with all panelists and **Shirli Axelrod**, Senior Environmental Analyst, Seattle Public Utilities and **Al Dietemann**, Conservation Leader, City of Seattle, WA



# RPN

**Nonprofit, ~200 members**

- **States**
- **Local governments**
- **Federal agencies**
- **Colleges and universities**
- **School districts**
- **Businesses**
- **Non-profits**

## RPN Mission

*“Promote and practice responsible purchasing by identifying best practices, developing effective purchasing tools, educating the market, and using our collective purchasing power to maximize environmental stewardship, protect human health, and support local and global sustainability.”*





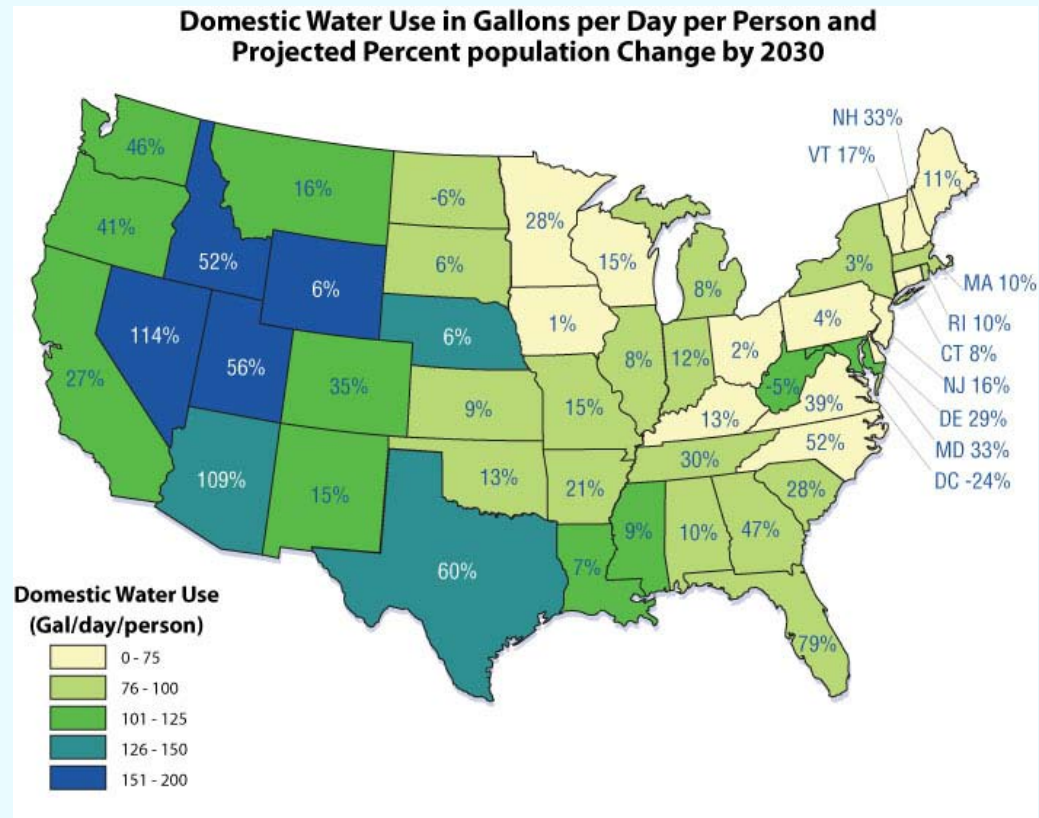
## Water Efficiency and WaterSense®

**Tara O'Hare**  
U.S. Environmental Protection Agency



# The Need for Water Efficiency

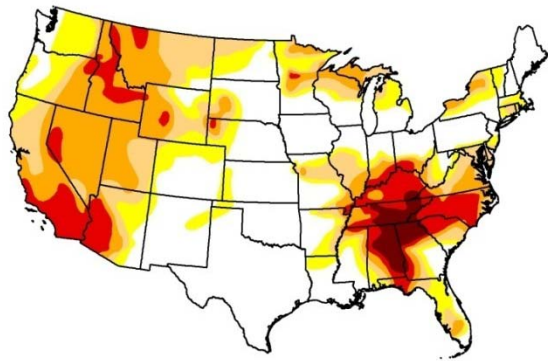
- Our national thirst for water is increasing
- Demand coupled with climate change will increase stresses on water supplies
- Water utilities may need to invest more than \$500 billion to update aging infrastructure in the next 20 years



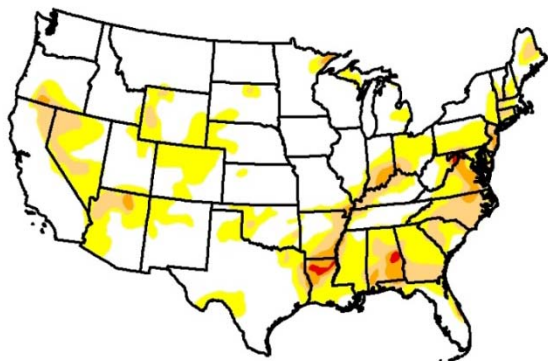




# Water Scarcity is a Reality

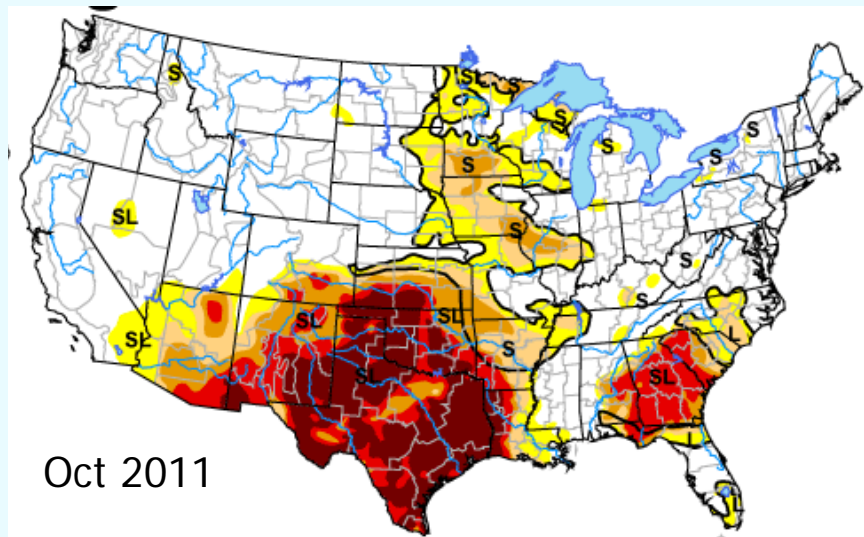


Sep 2007



Sep 2010

- Weather patterns change every year, but drought happens somewhere in the country every year
- Climate change only exacerbates problems and increases uncertainty

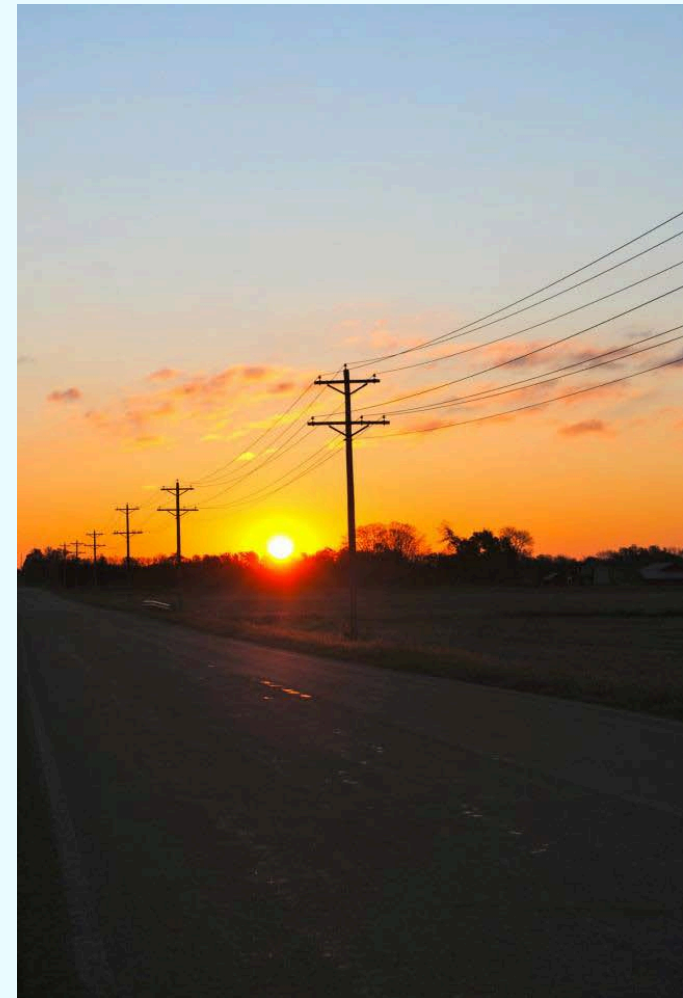


Oct 2011



# Not Just About Water

- Moving, treating, and heating water uses energy
  - Every gallon of water has an energy “footprint”
  
- Water sector energy use
  - Nationally - ~3-4%
  - California - ~20%
  - Municipal level - can be > 40%
  - System level - energy is one of the highest utility costs







# How do we use water as a nation?

Livestock



Less than 1 percent

Self-Supplied Domestic



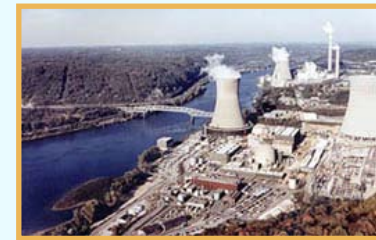
1 percent

Public Supply

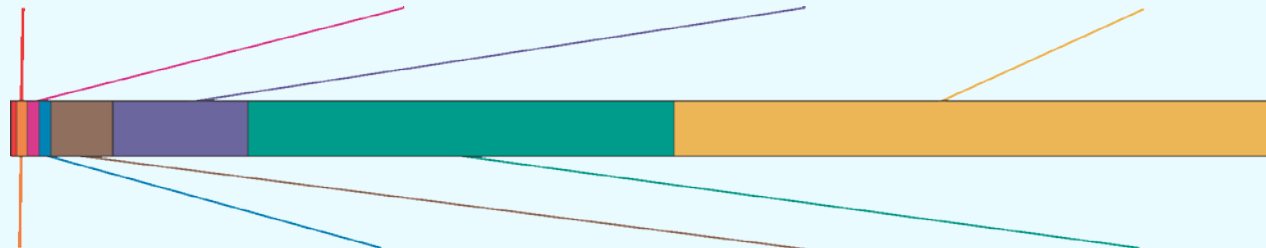


11 percent

Thermoelectric Power



49 percent



1 percent



Mining

2 percent



Aquaculture

4 percent



Self-Supplied Industrial

31 percent

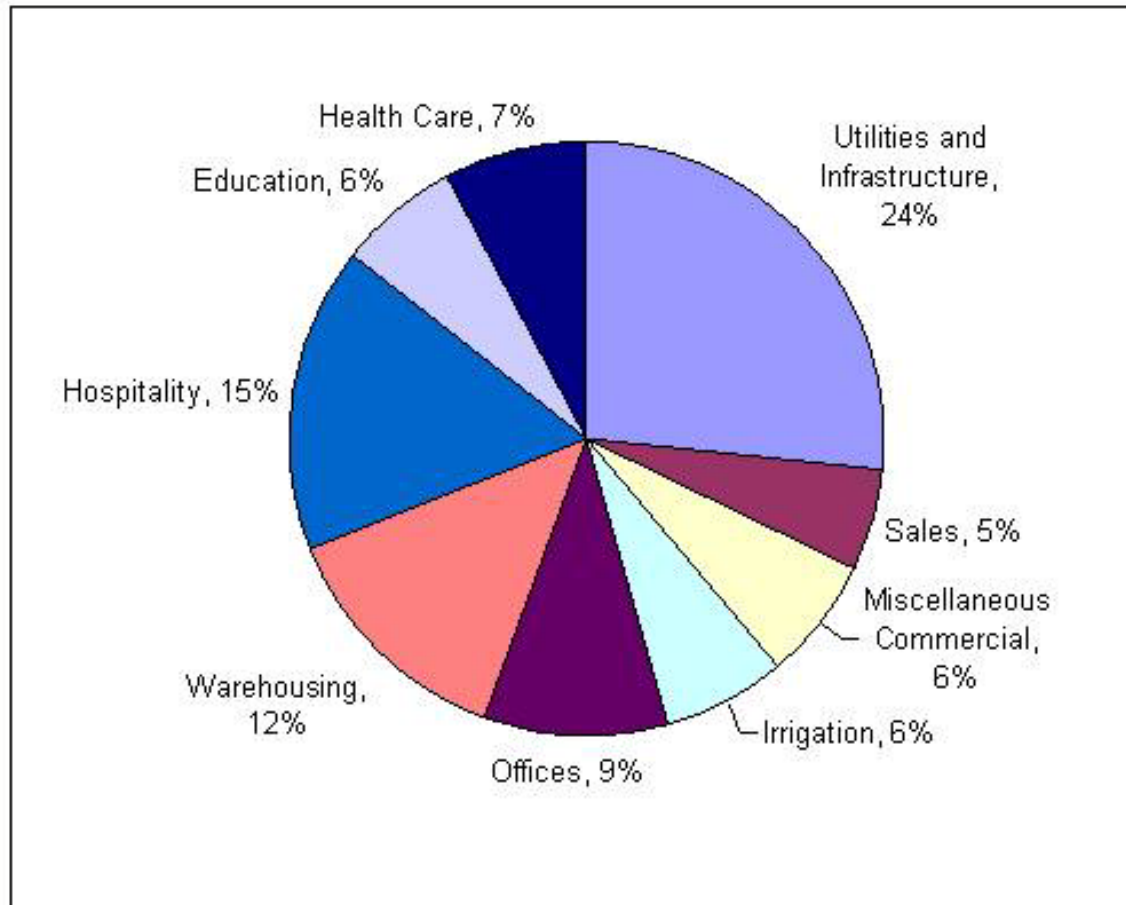


Irrigation



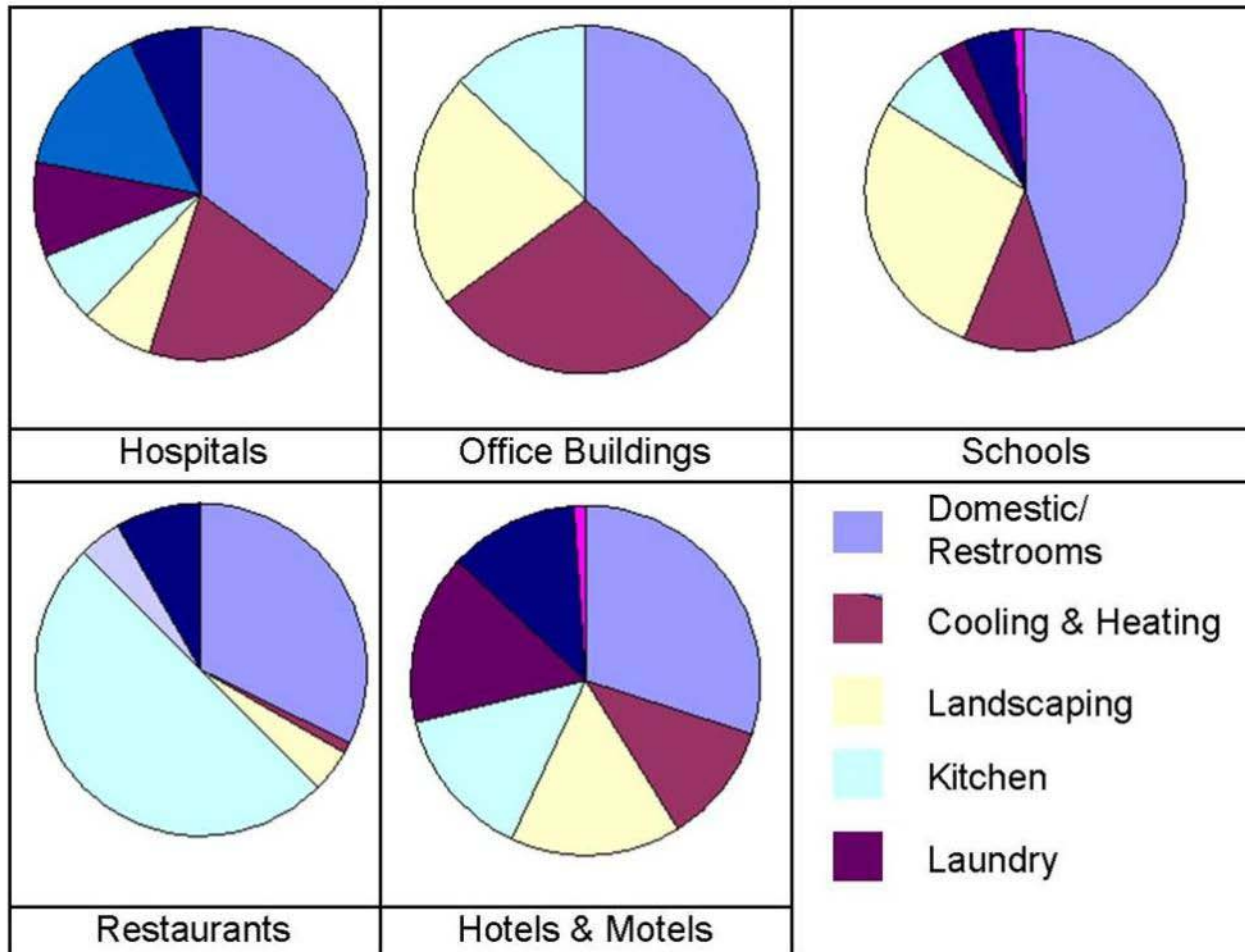


# How do we use water across the commercial sector?





# How is water used within commercial settings?





# What is WaterSense?

**WaterSense is voluntary partnership and labeling program launched by EPA in 2006**

- Addresses water efficiency and performance
- At least 20% water use reduction in products
- A label with integrity





# Five Years of Savings



- 125 billion gallons of water have been saved from all WaterSense labeled products shipped
- Consumers saved \$2 billion in water and energy bills
- Participation jumped to more than 2,100 partners
- More than 3,200 labeled plumbing fixture models

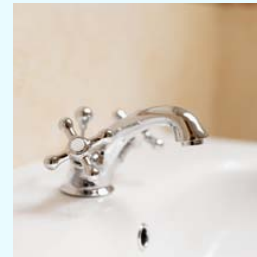




# WaterSense Labeled Products



**Tank-Type Toilets**  
Labeled since 2007  
Over 900 labeled models



**Lavatory Faucets**  
Labeled since 2007  
Over 2,800 labeled models



**Flushing Urinals**  
Labeled since 2009  
90 labeled models



**Showerheads**  
Labeled since 2010  
Over 400 labeled models





# WaterSense Labeled Products



## **New Homes**

Labeled since 2010  
55 labeled homes



## **Irrigation Controllers**

Final spec released  
11/3/11  
Coming Soon!

**Labeled products are listed at:**

[www.epa.gov/watersense/products/index.html](http://www.epa.gov/watersense/products/index.html)



# Schedule for Evaluating WaterSense Products

	<b>Complete</b>	<b>2011/2012</b>	<b>2012 and Beyond</b>
<b>Irrigation</b>	<b>Irrigation Controllers Professional Certification Programs</b>		<b>Irrigation Sprinklers Moisture Sensors Drip/Micro Technology</b>
<b>Residential Plumbing</b>	<b>Toilets Faucets Showerheads</b>	<b>Water Softening Systems</b>	<b>Water Treatment Systems</b>
<b>Commercial Plumbing</b>	<b>Urinals</b>	<b>Pre-rinse Spray Valves Flushometer Valve Toilets</b>	<b>Dipper Wells</b>
<b>Other</b>	<b>New Homes</b>		<b>Autoclaves Glassware Washers Additional Professional Certifications</b>

**Significant opportunity for associated energy savings**



# WaterSense and Energy

- Water factors are included in many ENERGY STAR qualified products
  - Ice machines
  - Steam cookers
  - Dishwashers
  - Clothes washers
- Federal Energy Management Program designates water and energy efficient products
  - [http://www1.eere.energy.gov/femp/technologies/eep\\_purchasingspecs.html#covered](http://www1.eere.energy.gov/femp/technologies/eep_purchasingspecs.html#covered)



# Water Efficiency and Green Building

- WaterSense and water efficiency are components of many green building programs, codes, standards, and specifications including:
  - US Green Building Council's *Leadership in Energy and Environmental Design* (LEED) program
  - International Code Council's (ICC) *Green Construction Code* (in draft)
  - International Association of Plumbing and Mechanical Officials (IAPMO) *Green Plumbing and Mechanical Code Supplement*



# Water Management and Planning

- Measure water use with properly installed meters and sub-meters
- Set efficiency goals
- Conduct a facility water audit
- Incorporate water efficiency into procurement language and policies





# Measurement is Key

You can't manage what you don't measure



ENERGY STAR's  
Portfolio Manager can  
help track building water  
and energy use





# Water-Efficient Technologies and Design

## Designed Efficiencies

- Single-pass water
- Irrigation
- Alternate sources



## Efficient Products

- Cooling Towers
- Sanitary Fixtures and Fittings
- Commercial Kitchen Equipment



# Incorporate Water Efficiency Best Management Practices

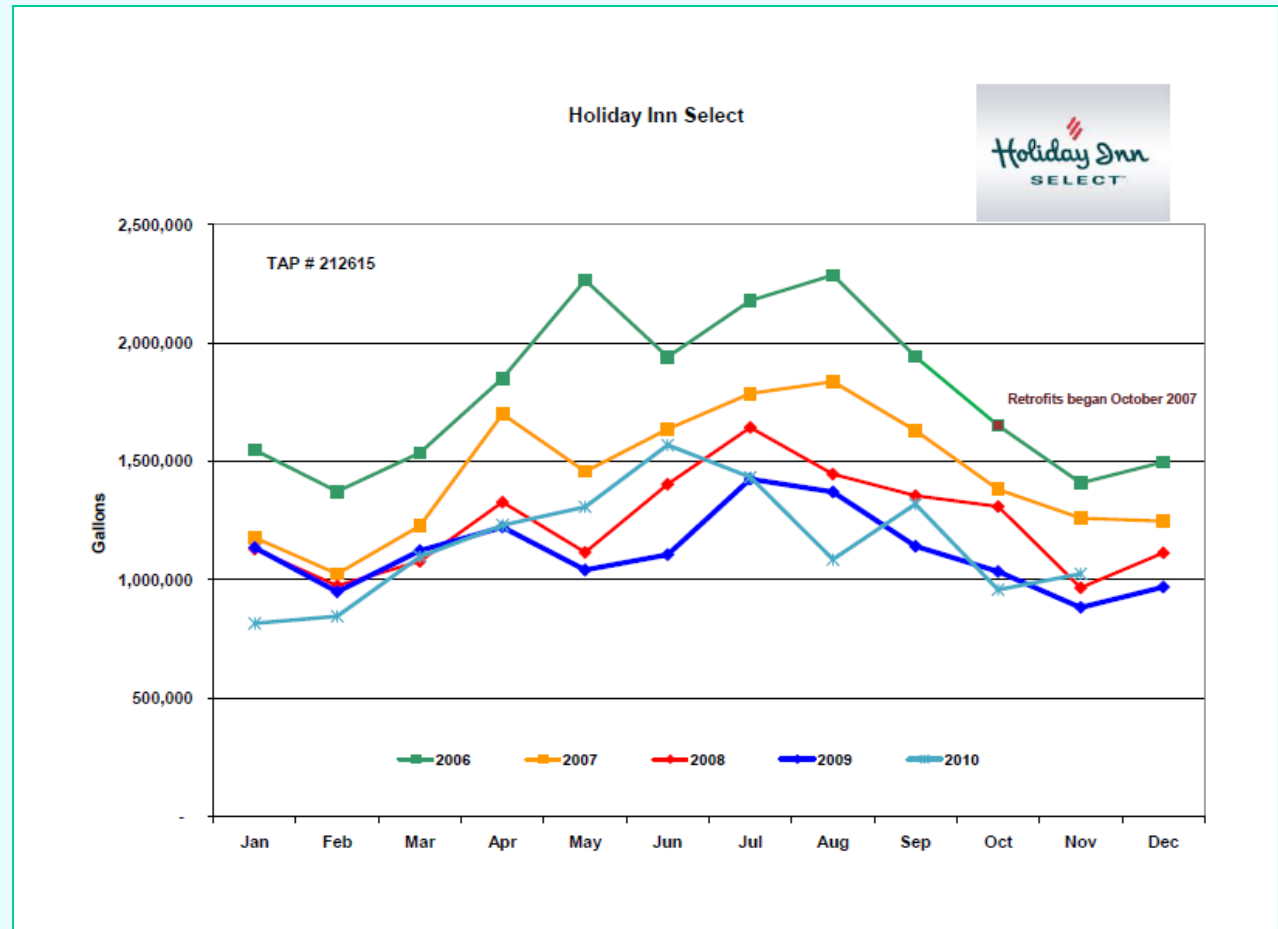
<i>EPA and FEMP Best Management Practices</i>	
<i>Water Management Planning</i>	<i>Boiler/Steam Systems</i>
<i>Information and Education Programs</i>	<i>Single-Pass Cooling Equipment</i>
<i>Distribution System Audits, Leak Detection &amp; Repair</i>	<i>Cooling Tower Management</i>
<i>Water-Efficient Landscaping</i>	<i>Commercial Kitchen Equipment</i>
<i>Water-Efficient Irrigation</i>	<i>Laboratory/Medical Equipment</i>
<i>Toilets and Urinals</i>	<i>Other Water Use</i>
<i>Faucets and Showerheads</i>	<i>Alternate Water Sources</i>

[http://www1.eere.energy.gov/femp/program/waterefficiency\\_bmp.html](http://www1.eere.energy.gov/femp/program/waterefficiency_bmp.html)



# Case Study: Sanitary Fixtures Holiday Inn, San Antonio, TX

- Holiday Inn Select in San Antonio, Texas upgraded toilets, faucets, and showerheads in 397 guest rooms
- Saved 7 million gallons (26.5 million liters) of water per year and \$35,000 in water and sewer bills





# Summary

- Population growth and limited supply drive the need to use water wisely
- U.S. EPA's WaterSense Program helps consumers choose water-efficient, high-performing products
- Water efficiency and WaterSense are becoming an important aspect to green building specifications
- Water efficiency best practices can be cost effectively incorporated into existing buildings and new construction



# Visit us on the web, Facebook & Twitter

The screenshot shows the Facebook profile for WaterSense. The page includes a cover photo with a blue water drop character, a profile picture of the same character, and a bio that reads: "WaterSense is a partnership program sponsored by EPA that helps you protect the future of the nation's water resources and provides an easy-to-identify label for water-efficient products." The page also features a list of friends and a section for "People Like This" with profile pictures of various users.

The screenshot shows the Twitter profile for EPA WaterSense. The header includes the "We're for Water" logo and the text "Get short, timely messages from EPA WaterSense. Twitter is a rich source of instantly updated information. It's easy to stay updated on an incredibly wide variety of topics. Join today and follow @EPAwatersense." Below this is a "Sign Up" button. The main content area features a tweet that says "It's that time again! Get your Partner of the Year Award application in before the deadline. http://bit.ly/cwCjHg". The right sidebar shows the number of followers (31) and retweets (52), along with a list of users following the account.

The screenshot shows the EPA WaterSense website. The header features the EPA logo and the text "United States Environmental Protection Agency". Below this is a navigation menu with links for "About Us", "Products", "Services", "Spaces", "Water Efficiency", "Partners", and "Resources". The main content area has a large banner with a child looking through a magnifying glass and the text "New and improved product search! Find WaterSense labeled products! >". Below the banner is a section titled "DID YOU KNOW?" with the text "Save water and protect the environment by choosing WaterSense labeled products in your home and business and taking simple steps to save water each day." The footer includes contact information for the EPA and links to "News Feeds", "Podcasts", "EPA Mobile", "News by Email", and "Webinars".



## More Information

- WaterSense Information
  - Web site: [www.epa.gov/watersense](http://www.epa.gov/watersense)
    - List of products
    - Partnership information
    - Educational fact sheets and resources
  - E-mail: [watersense@epa.gov](mailto:watersense@epa.gov)
  - **Toll-free Helpline:**  
**(866) WTR-SENS (987-7367)**





# ***Water Efficiency for ICI***



**Cinnamon Asiyyih Black  
Water Conservation Specialist  
City of Raleigh, NC**

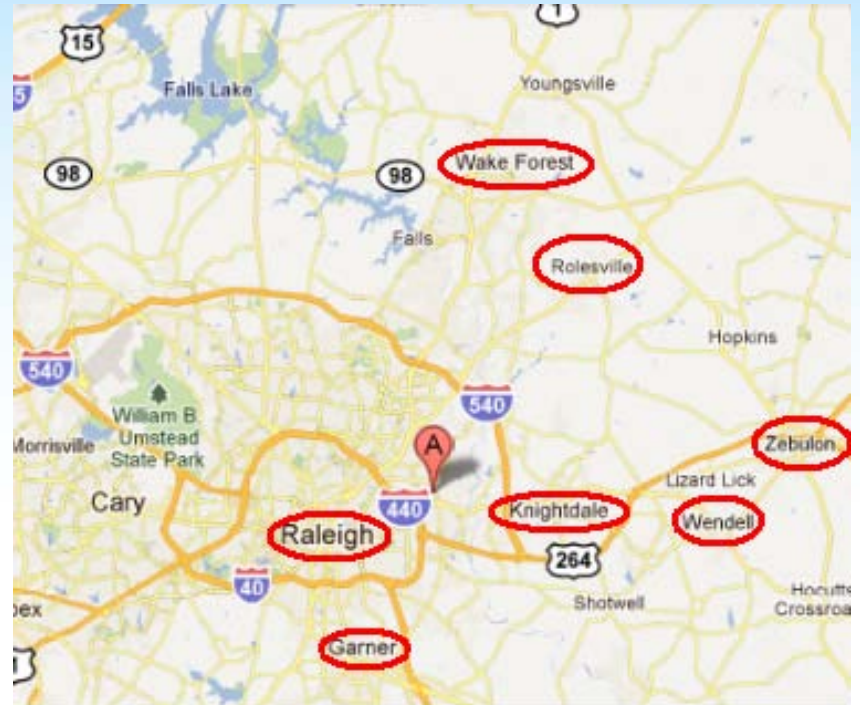
# Outline

- Where is the City of Raleigh
- Water Efficiency Check-ups
- Toilets, Showerheads and Aerators
- The Energy Star Label & Products
- City of Raleigh's and Water-Efficient Projects
- Bidding Specifications



# Where is Raleigh?

- North Carolina:  
9,535,483
- Wake County: 900,993
- City of Raleigh Service  
Population: 403,892  
(April 2010 Census)



# Water Efficiency Check-ups

- Do you know how much water your company uses?
- The *water efficiency checkup*, WEC, (aka “*water audit*”) is the process of calculating how much water comes into a facility, and how much goes out.
  - from the meter, through the water –using activities to account for leaks and/or inefficiencies.
- The WEC places data into a worksheet or spreadsheet to details the variety of consumption and losses that exist in a facility.
  - Benefits from retrofitting can be extrapolated.
- AWWA Water Audit Software available at: [www.awwa.org](http://www.awwa.org)







# WaterSense

## Toilet Rebate Program



Toilets are an inefficient use of potable water and a prime source of leaks.

### How Much Water Do We Use?



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



TOILET AGE	GPF	ANNUAL WaterSense SAVINGS*
Pre 1950's	7	\$245.41
1950-1980	5.5	\$181.06
	5	\$159.60
1980-1994	4.5	\$138.15
	4	\$116.70
	3.5	\$95.25
1994	1.6	\$13.73
WaterSense	1.28	Save even more with a dual flush toilet!

# Flushometers (Flush Valve) Toilets & Urinals

- The City also offers a \$200 rebate to change out old commercial style, tankless, flushometer toilets with ones that use 1.28 gpf and have a MaP rating of 800 or higher.
- WaterSense labeled High Efficiency Urinals, and waterless urinals are also rebated.





# High Efficiency Showerhead

Approximately 17 percent of indoor water usage can come from showering. Most showerheads use 2.5 gallons per minute (gpm) - using 25 gallons for a 10-minute shower!

High Efficiency 1.5 gpm showerheads can save 40%.



# High Efficiency Aerators

Approximately 15 percent of indoor water usage can come from using the faucet; washing hands and brushing teeth. The average aerator uses 2.2 gallons per minute (gpm) or more.

1.5 and 0.5 gpm aerators for the kitchen and bath, respectively can half your water usage in these areas.



# Don't forget to look for...



## The WaterSense Label

[www.epa.gov/watersense](http://www.epa.gov/watersense)



# The Energy Star Label



[www.energystar.gov](http://www.energystar.gov)





## ENERGY STAR bottled water dispenser

- Standard units can use more energy than a large refrigerator; approximately 4 billion kWh/year.
- ENERGY STAR models requires about half as much energy as a standard unit.

## ENERGY STAR-qualified clothes washer

✓ Save up to \$550 in operating costs.



## ENERGY STAR Commercial dishwashers

- 25 percent more energy efficient.
- 25 percent more water efficient.



## ENERGY STAR Commercial Ice Machines

- 15 percent more energy-efficient.
- 10 percent more water-efficient.



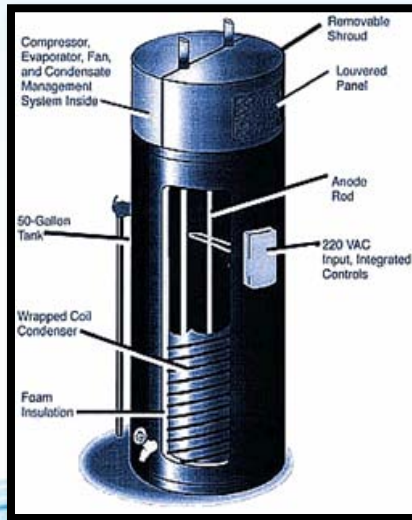


# Water Heating Technologies

## Electric



## Gas



Don't forget Solar

## ENERGY STAR-qualified boilers

- (AFUE) annual fuel utilization efficiency rating of 85% or greater.
- They achieve greater efficiency with improved features.



# 2011 Federal Tax Credits for Consumer Energy Efficiency

NOTE: Tax credits that were 30% up to \$1,500 EXPIRED on December 31, 2010. New tax credits were passed, but at lower levels.


2011 Tax Credits

Filing 2010 Taxes

## What You Need to Know

- ✧ What is included in the 2011 Federal Tax Credit?
- ✧ [How do I apply for my Federal Tax Credit?](#)

## What is included in the Tax Credit?



**Tax Credit:** 30% of cost with no upper limit

**Expires:** December 31, 2016

**Details:** Existing homes & new construction qualify. Both [principal residences](#) and second homes qualify. Rentals **do not** qualify.

▶ Geothermal Heat Pumps

▶ Small Wind Turbines (Residential)

▶ Solar Energy Systems

▶ Water Heaters (non-solar)

▶ Windows & Doors



US ENVIRONMENTAL PROTECTION AGENCY  
**BATTLE OF THE BUILDINGS**  
 EPA'S NATIONAL BUILDING COMPETITION  
 AND THE WINNER IS... [GO](#)



**ENERGY STAR**

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SEARCH

- Find ENERGY STAR Products
- How a Product Earns the Label
- Save Energy at Home
- Join Our Movement

## Special Offers and Rebates from ENERGY STAR Partners

To encourage customers to buy energy efficient products, ENERGY STAR partners occasionally sponsor special offers, such as **sales tax exemptions or credits**, or **rebates** on qualified products. Partners also occasionally sponsor **recycling incentives** for the proper disposal of old products. The search below is provided as a service to consumers to find such special offers or rebates where they exist, based on information that partners submit to ENERGY STAR.

Enter your zip code below to find out if there are any special offers or rebates currently available on ENERGY STAR qualified products in your area.

### Special Offer/Rebate Finder

Your zip code:



Product(s) you're looking for:

#### Appliances

- Clothes Washers
- Dishwashers
- Refrigerators & Freezers
- Residential Dehumidifiers
- Room Air Conditioners
- Water Coolers

#### Fans

- Ceiling Fans
- Residential Ventilation Fans

#### Heating and Cooling Equipment

- Boilers
- Ceiling Fans
- Central AC
- Electric Air-Source Heat Pump
- Furnaces
- Geothermal Heat Pumps
- Programmable Thermostats

#### Home Electronics

- Audio and DVD Products
- Audio/Video
- Combination Units

**ENERGY STAR**  
Appliance Rebate Program

**Tax Credits Under the Energy Bill**

**California**  
Special Offers and Rebates  
Click to search at [www.fypower.org](http://www.fypower.org)

**Flex your POWER**

EXIT

**MA RESIDENTS**

Take charge of your energy with savings offers on ENERGY STAR® products.

[MassSave.com](http://MassSave.com) **mass save**

# City of Raleigh's Water-Efficient Projects



# LEED & The City of Raleigh

- LEED – Leadership in Energy and Environmental Design
- All new City buildings over 10,000 SF are required to achieve LEED Silver certification
- LEED Silver Certification: NRWTP Training and Administration building
- Pursuing LEED Silver certification: DE Benton WTP Administration Building
- LEED Silver Certification: Raleigh Convention Center





# NRWWTP Training & Administrative Building



Building Cost - \$2.47M

Size – 9,500 SF

Additional Cost for LEED Certification - \$64,261 (2.6% Increase)

# DE Benton WTP Administration Building



**Building Cost - \$3.4M**

**Size - 11,000 SF**

**Estimated Additional Cost for LEED Certification - \$552,100 (16.2% Increase)**







# Raleigh Convention Center

- **LEED Silver Certification**
- 11-acre Downtown site
- Previous Brownfield
- 30% Water use reduction:
  - High Efficiency toilets, urinals and lavatories
  - This equates to an estimated water savings of more than 825,000 gallons per/yr.

# Partner' Projects

- St Augustines' College:
  - Replaced approximately 200 toilets: up to 5gpf to 1.28
- Trinity Properties:
  - Replaced approximately 803 toilets: up to 5gpf to 1.28
- Raleigh Housing Authority:
  - Performed Water Check-Ups
  - Replaced 1,300+ toilets: from 3.5-4.5 to 1.28 gpf
  - Replaced 600+ showerheads and aerators





# NC STATE UNIVERSITY

- Replace approximately 3,000 2.2 gpm aerators to 0.5 gpm.
- Approximately 1000 kitchen aerator: 2.2 gpm to a 1.5 gpm.
- Approximately 2500 showerheads: 2.5 gpm to a 1.5 gpm showerhead.
- Replaced ALL tank-type toilets: 3.5 gallon flush to a 1.6 gallon flush.
- Replaced several hundred Flush Valve toilets prior to the rebate. 3.5 gpf with new 1.6 gpf toilets.
- Replaced Approximately 629 Flush Valve toilets: 3.5 to 1.28 gpf.
- In the process of changing out all old high consumption urinals with 1.0 gpf urinals.





# Bidding Specifications

Remember, you can order to **your** specific needs:

- MaP Rating
- Dual-Flush, Single, Pressurized, Flapperless, etc.
- Manual flush versus automatic
- Rough-In, trapway, flushing mechanism.
- Highest efficiency rating:
  - 0.5 gpm for sinks
  - 1.28 - 0.8 for toilets
  - 1.5 gpm for kitchen and showers
- Timed sinks for shut off in 5 seconds
- WaterSense & Energy Star label
- Remember, bulk products equal greater savings



# Queries? Comments?

Contact: Cinnamon Àsìyih Black  
Water Conservation Specialist

City of Raleigh: [www.raleighnc.com](http://www.raleighnc.com)

Email: [Cinnamon.Black@raleighnc.gov](mailto:Cinnamon.Black@raleighnc.gov)



# Calculate Water Savings During Product Production

## Lifecycle Environmental Impact

The following is a break down of the environmental impact of your choices for different grades of paper.

Recalculate	Baseline Paper	100% Recycled Paper
Paper	Uncoated Freesheet (e.g. c) ▼	Uncoated Freesheet (e.g. c) ▼
Quantity per year	1000 Pounds ▼	1000 Pounds ▼
% Postconsumer	0	100
Wood Use	2 tons	0 tons 2 tons less
Net Energy	15 million BTU's	11 million BTU's 4 million BTU's less
Greenhouse Gases	2,941 lbs CO <sub>2</sub> equiv.	1,711 lbs CO <sub>2</sub> equiv. 1,230 lbs CO <sub>2</sub> equiv. less
Wastewater	11,109 gallons	5,186 gallons 5,924 gallons less
Solid Waste	954 pounds	595 pounds 360 pounds less





## Bottled Water: Calculator

This Bottled Water Calculator, developed by RPN, compares the cost and environmental impacts of 16.9 oz. bottles of water with tap water. Results are expressed in gallons of water, mega joules of energy, gallons of oil, pounds of CO<sub>2</sub>e, and dollars saved.

Edit the values below and click update.

### How much water do you drink?

Enter the total number of 16.9 oz. bottles of water purchased by your organization in a year:

Cost of Tap Water per Gallon (\$ per gallon):

(If you know your local cost, please enter - otherwise leave the national average.)

Cost of 16.9 oz Bottle of Water (typical is \$1.50):

### Impact

Total Water Drank:	<b>1,563</b>	gallons
Extra Water Required for Production and Purification:	<b>3,125</b>	gallons
Energy Required for Manufacturing:	<b>1,006</b>	megajoules
Oil Required to Produce the Plastic Bottle(s):	<b>248</b>	gallons
CO <sub>2</sub> e to Manufacture Plastic Bottle(s):	<b>1,875</b>	pounds

**Your Extra Cost for Bottled Water: \$14,980.00**



# RPN Member Resources



- *Responsible Purchasing Guides* for 15 product categories



- **Webinars on “green” procurement issues**
- **Quarterly newsletter highlighting “green” purchasing activities and resources**



- **Sustainable purchasing policies and specifications**



- *Model Responsible Purchasing Report*
- **Calculators and other tools**





# RPN's Green Building Initiative

## Projects may include:

- Creating “green” purchasing specifications
- Reviewing bid responses
- Facilitate cooperative contracting opportunities for green building products or services
- Other green building initiatives with measurable results

## ELIGIBLE EPA REGIONS

- 1: Connecticut, Maine, Massachusetts, Rhode Island, Vermont, New Hampshire
- 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
- 7; Nebraska, Kansas, Missouri, Iowa
- 9: Alaska, California, Hawai'i, Nevada



# RPN's Green Building Initiative

## Application details

- Download application at [www.responsiblepurchasing.org/buildings](http://www.responsiblepurchasing.org/buildings)
- Applications accepted until December 31, 2011
- Send to Phillip Kobernick at [phillip@responsiblepurchasing.org](mailto:phillip@responsiblepurchasing.org)
- Questions?  
Call us at 510.547.5475



# Upcoming RPN Green Building Webinars



- **High-performance Lighting Equipment**
- **Renewable Energy**
- **Green Cleaning**
- **Purchasing for LEED EBOM**



Questions about RPN?



**Phillip Kobernick**

**Responsible Purchasing Network**

**[phillip@responsiblepurchasing.org](mailto:phillip@responsiblepurchasing.org)**

**510.547.5475**

**[www.responsiblepurchasing.org](http://www.responsiblepurchasing.org)**



# Join RPN

**Because Every Purchase Matters.**

## **Membership Benefits:**

- ▶ **Model policies and specifications**
- ▶ **Green purchasing webinars**
- ▶ **Certified green products database**
- ▶ **Expert sustainability speakers**
- ▶ **Responsible Purchasing Awards**

## **Consulting Services:**

- ▶ **Custom green specifications**
- ▶ **Green purchasing policies**
- ▶ **Life Cycle Analyses**
- ▶ **Green office audits**
- ▶ **Cost-saving green practices**

