

# Energy Star and WaterSense Programs

Cheryl McGovern, EPA, R9

Systems of rating and promoting energy and water  
efficiency

# All Water is Wastewater

- Planet Earth is a closed-looped system
- A finite supply of water is recycled on earth
- Nature cleans water through evaporation and condensation
- Man cleans water through filters, reverse osmosis and disinfection
- Self-deception should not stop us using water in the most efficient way possible

# ENERGY STAR Overview

- **ENERGY STAR is a joint program of U.S. EPA , U.S. DOE**
- **Introduced in 1992 as a voluntary labeling program designed to identify and promote energy efficient products, i.e., computers and monitors.**
- **The ENERGY STAR label is now on many additional products as well as new homes and buildings & plants**



# ENERGY STAR Products

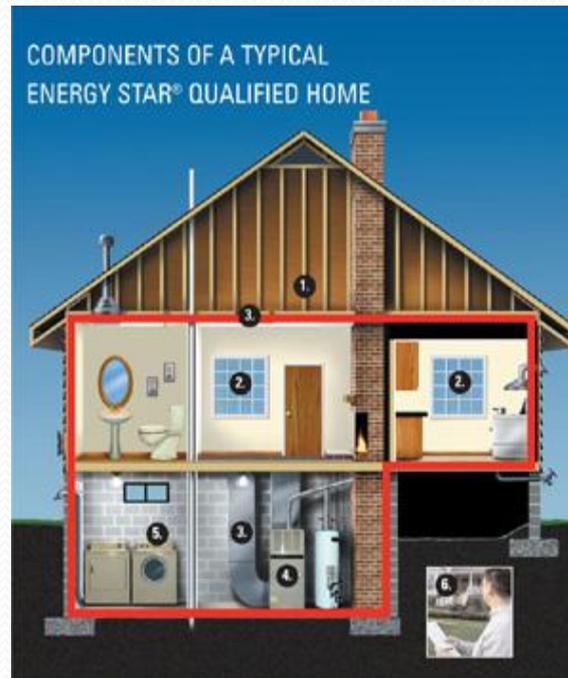
More than 50 product categories

- Appliances – clothes washers, dishwashers, refrigerators
- Lighting – compact fluorescent bulbs, residential light fixtures (recycle – Home Depot)
- Heating & Cooling – central AC, furnaces
- Home Envelope – windows, doors, skylights
- Website has product & rebate finders. (enter zip code & check product)



# HOMES

## New Labeled Homes and Existing Homes



# Energy Use/Costs for Home

- **21% of nation's total BTUs**
- **17% of total U.S. electricity use**
- **> \$160 B/yr to heat, cool, light, live in homes**
- **Average household ~ \$2100/yr**



# Energy Use/Costs for Homes

Residential energy consumption can be broken down into the following end uses:

1. Appliances & Lighting
2. Space Heating
3. Space Cooling
4. Water Heating
5. Refrigerators

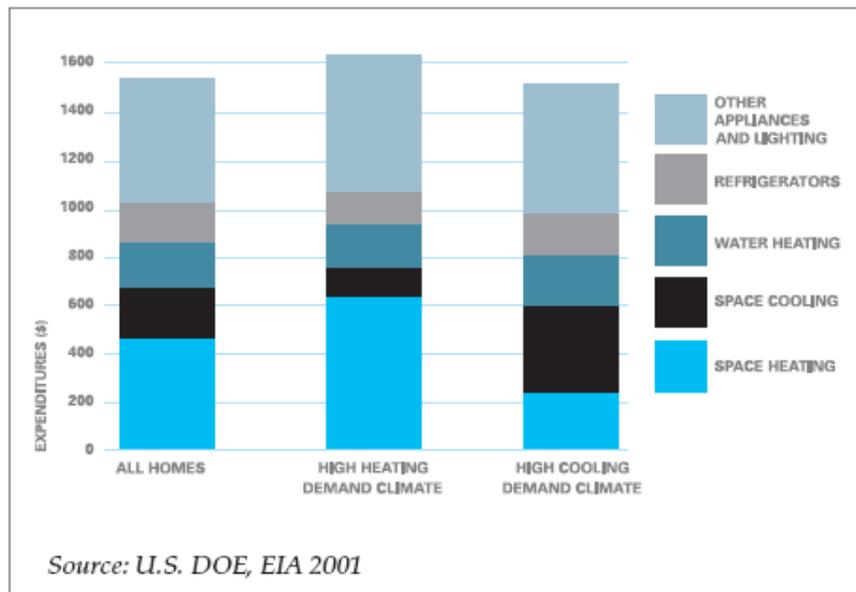
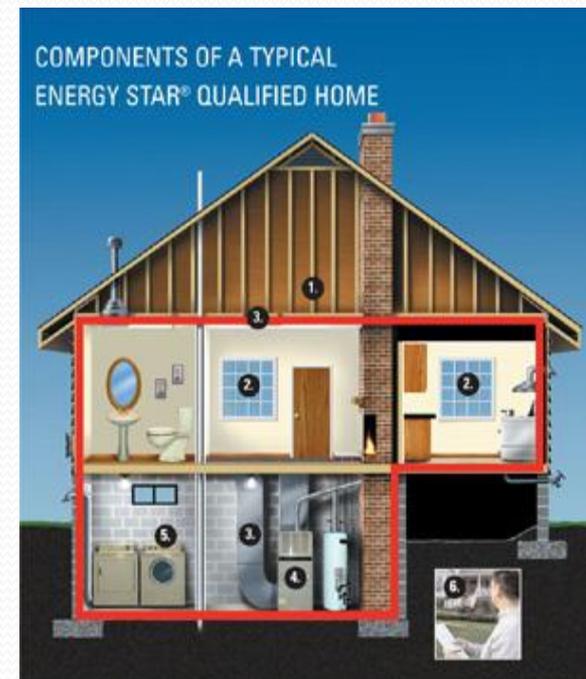


FIGURE 3. HOME ENERGY BILLS IN DIFFERENT CLIMATES

# ENERGY STAR for New Homes

Components of a typical ENERGY STAR qualified new home:

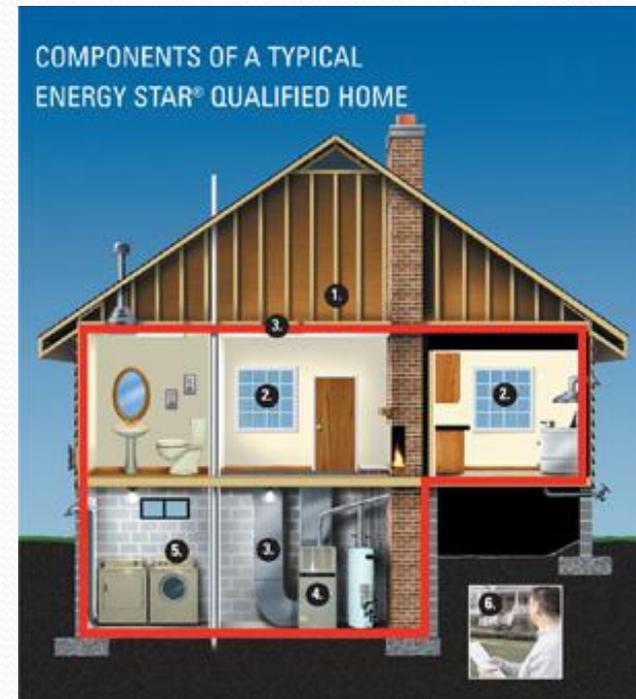
1. effective insulation
2. high performance windows
3. tight construction and ducts



# ENERGY STAR for New Homes

Components of a typical ENERGY STAR qualified new home, cont'd.

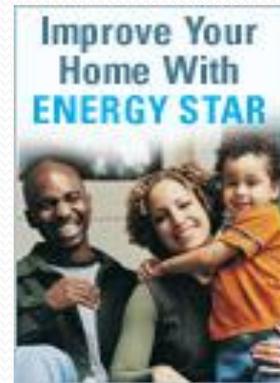
4. efficient heating & cooling equipment
5. efficient lighting & appliances
6. third party support & verification of Home Energy Rater



# ENERGY STAR for Existing Homes

## HOME ENERGY EFFICIENCY IMPROVEMENTS

- **Find Solutions to Common Home Problems**
  - **Assess home energy use**
  - **Finding a Contractor**
  - **Additional recommendations**



# Commercial Buildings: Assess Building Energy Efficiency

## ENERGY STAR Portfolio Manager

- Measure, track, benchmark energy use
- Rate performance from 1-100
- Compared to building peers
  
- Peers information based on DOE's Commercial Bldg. Energy Consumption Survey
  
- Rating of 75
  - performs better than 75% of peers
  - eligible for ENERGY STAR label
  
- ENERGY STAR labeled building on right



Westin San Francisco Airport

# Industry:

## Industrial Energy Management Information Center

- **ENERGY STAR Guides for Energy and Plant Managers**
  - thirteen industrial categories
  - developed by LBNL,  
sponsored by EPA
  - energy efficiency improvements
  - cost saving opportunities



# Industry:

## Assess Plant Energy Efficiency

Energy Performance Indicator (EPI)

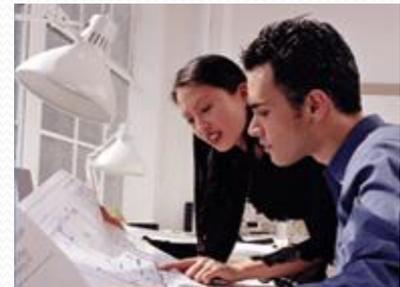
- Key operating data
- Ex. Auto Assembly
  - zip code
  - annual energy use
  - quantity of vehicles produced
- Score 1-100
- Plant evaluated relative to own industry
- Based on non-public data from Census Bureau



Former NUMMI Plant, Fremont CA

# ENERGY STAR Partnerships

- ENERGY STAR partners
  - more than 8000 organizations
  - private, public
  - interested in investing in energy efficiency
  
- ENERGY STAR provides
  - tools/resources
  - support energy efficiency decisions



# ENERGY STAR Partnerships

## IMPROVE ENERGY EFFICIENCY OF FACILITY

Example requirements:

- Sign commitment to continuous improvement of energy efficiency
- Measure, track, benchmark energy performance;
- Develop, implement plan to improve energy performance,



# ENERGY STAR Partnerships

## RECOGNITION

### Annual ENERGY STAR Awards

- **Sustained Excellence – awarded for long term commitment**
- **Partners of the Year – commitment to promote within own or outside organizations**
- **ENERGY STAR Awards for Excellence – partners promoting within, outside, community**



2008 Sustained Excellence Winner

## Press Releases

# What is Portfolio Manager?

**An assessment tool that measures a facility's energy efficiency now and over time – benchmark and track improvements**

**Potential award, educate functions for WWTP**

**Mirror that shows a facility in a new light**



# What is Portfolio Manager?



- ENERGY STAR Portfolio Manager measures energy efficiency in a uniform way
- Establishes a baseline of energy efficiency
- Provide a way to compare a facility against similar facilities – creating a benchmark to measure against
- October 1, 2007, wastewater treatment plants added to Portfolio Manager – not drinking wtr at this point – awards may be added

# Benchmarking - Assessment

- Uses internet, no special software required
- Regression analysis – energy use per unit of flow
- Normalized for external factors
- Wastewater – results against model shows statistical significance at 90% confidence level
- Benchmark based on national survey, average energy use for different treatment processes

# Benefits of Portfolio Manager

- Facilities can see how their energy use compares against similar facilities in a national database
- A rating is given from 1-100 (100 most efficient, 50 being average) using uniform, tested criteria
- Portfolio Manager uses emissions factors, which vary by geographic region based on the source of power used, to determine the GHG carbon emissions
- Facilities baseline, benchmark, and track improvements to increase ratings from over time using internet

# Saving Energy Saving Money

- U.S. drinking water and wastewater systems spend about \$4 billion a year on energy to pump, treat, deliver, collect and clean water – with much of this cost borne by ratepayers and municipalities.
- Nationwide, drinking water and wastewater systems use 75 billion kilowatt hours per year – as much as the pulp and paper, and petroleum industries combined (enough electricity to power 6.75 million homes for an entire year).
- Energy costs to run these systems can represent as much as one-third of a municipality's electricity use.
- Reducing energy and water at wastewater facilities can make a significant difference for the environment and for the pocket book

# Information To Get Benchmark Score

1. Zip Code
2. Energy use for all fuel types – monthly for 16 consecutive months
3. Average Daily Influent Flow
4. Average Influent BOD and Effluent BOD – averaged over 12 months (mg/l)
5. Plant Design Capacity – treatment design – mgd
6. Fixed Film Trickle Filtration Process (y/n)
7. Nutrient Removal (y/n)

**EPA Region 9 has benchmarked 42 WWTPs**



## What Is WaterSense?



- Voluntary partnership and labeling program launched by EPA in 2006
- Simple way for consumers to identify products that use 20% less water and perform well





## What's Special About WaterSense?



- A label with integrity
  - Third-party tested and certified
  - Backed by the credibility of EPA
- Smart use of resources
  - EPA provides national standardization and outreach for water-efficiency
  - Manufacturers absorb product research, testing, and branding costs
  - Licensed certifying bodies certify the products and police the label's use





## WaterSense Labeled Fixtures

- Toilets
  - 430+ labeled models
- Faucets and faucet accessories
  - 1,500+ labeled models
- Urinals
  - Final specification released in October 2009
- Find Products
  - [www.epa.gov/watersense/products/index.html](http://www.epa.gov/watersense/products/index.html)





## How the Program Works

Builder partners with EPA and commits to labeling



Home inspected for criteria and any issues addressed



Label certificate issued by licensed certification provider



Builder advertises using builder promotional mark





## Strength in Partnerships

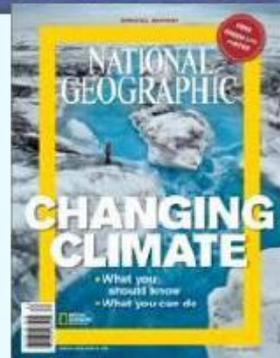
- **EPA** creates specifications with stakeholders
- **Manufacturers** design and create products
- **Certification bodies** test and label products
- **Retailers/Distributors** get products on shelves
- **Promotional partners** spread the word
  - Utilities, State and Local Governments, Nonprofit Organizations
- **Irrigation partners** work with homeowners





## National News Coverage

- Features in media outlets
  - CNN
  - Today Show
  - Good Morning America
  - National Geographic
  - USA Today
  - Newsweek
- \$16 million in advertising value
- More than 1.2 billion “impressions.”

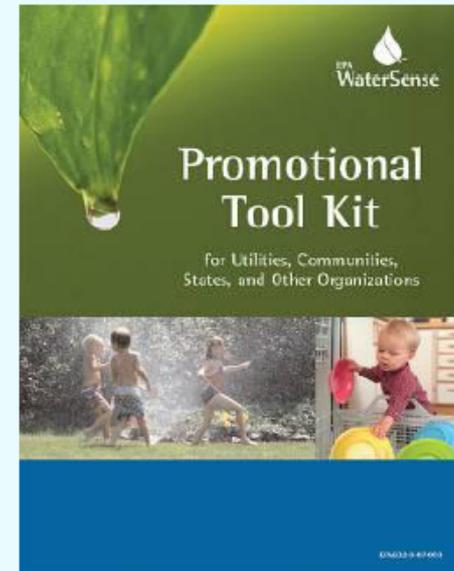




# WaterSense Tools & Resources— Promotional Tool Kit

## Promotional Partners Tool Kit

- **Audience:** Utilities, Communities, Water Districts, NGOs, Trade Associations
- **General WaterSense marketing materials, fact sheets, media outreach, water bill stuffers**





## Annual Reporting Process

- Annual reporting forms are required from promotional, retail/distributor, and manufacturer partners.
- The forms:
  - Provide opportunity to give feedback
  - Drive direction of the program
  - Help in measuring results
  - Requirement for submitting an awards application
- Annual reporting forms are available at:  
[www.epa.gov/watersense/partners/annual\\_reporting.html](http://www.epa.gov/watersense/partners/annual_reporting.html)





## Coverage and Results

- 100 print, online, and radio broadcasts statewide
- 127 television broadcast segments
- More than 250 rebates
- Potential water savings - 4 million gallons per year
- Increased local availability of WaterSense labeled products



The Atlanta  
Journal-  
Constitution

