



Saving Energy with Water Efficiency

July 18, 2007

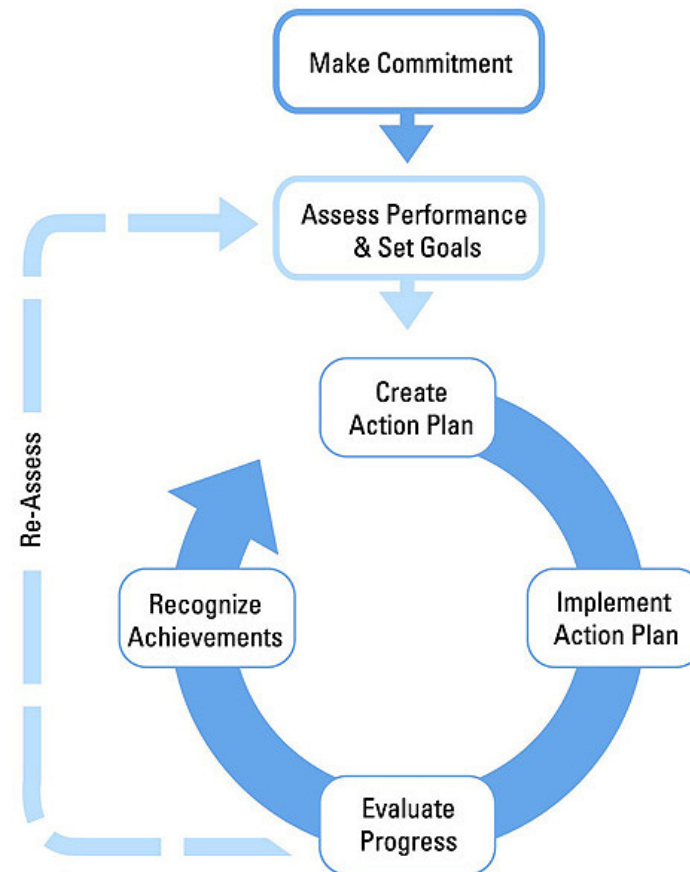
Call-in Number: 1-866-299-3188

Conference Code: 202 343 9965

About The Web Conferences



- **Monthly**
- **Topics are structured on a strategic approach to energy management**
- **Opportunity to share ideas with others**
- **Slides are a starting point for discussion**
- **Open & Interactive**



Web Conference Tips



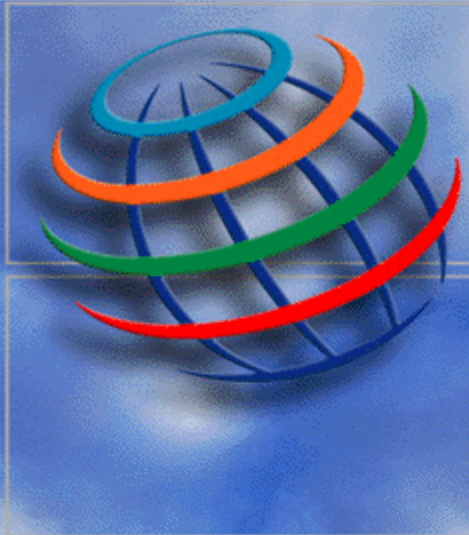
- Mute phone when listening! Improves sound quality for everyone.
Use * 6 – to mute and # 6 to un-mute
- Hold & Music – If your phone system has music-on-hold, please don't put the web conference on hold!
- Presentation slides will be sent by email to all participants following the web conference.

Today's Web Conference



- Welcome
- Rob Meyers – Frito Lay
- Stuart Reeves – Poudre School District
- Announcements

Frito-Lay North America Water Conservation Program



ENERGY STAR Networking Web Conference
July 2007

Agenda

- **Resource Conservation Overview**
 - Program
 - Goals
 - Results
- **Water Consumption @ Frito-Lay**
- **The Gallon per Pound Challenge**
- **Case Studies**
 - Utility Walls
 - Low Water Corn Processing
 - Potato Chip Slice Moisture Control & Fryer Stack Heat Recovery
 - Sanitation Optimization

FLNA

- **Division of PepsiCo - United States & Canada**
 - About 30% of Pepsi's \$35 Billion Revenue
 - Over 48,000 Employees
 - 40 Manufacturing Facilities
- **Manufacturing Operations Account for...**
 - 97+% of Energy Consumption (Stationary)
 - 99.9+% of Water Consumption
- **2006 ENERGY STAR Partner of the Year**
- **PepsiCo 2007 ENERGY STAR POY**



Resource Conservation

Requires Process, Strategy, Execution & Endless Determination

Set A Big Challenge

- Little Goals Produce Little Results

Create A Team

- Every Site Needs Experts With Enthusiasm

Budget

- We're All Driven By The Numbers

Scorecard

- The Budget Won't Show The Opportunities

Audit

- Demand Success & Help To Achieve It

Innovate

- You Know Your Own Business Best

Execute

- The Best Laid Plans ... Are Still Just Plans

Communicate Results

- Share The Stories & Rewards Of Success

Setting a Big Hairy Challenge

Achieve Big Hairy Audacious Goals In Energy Conservation

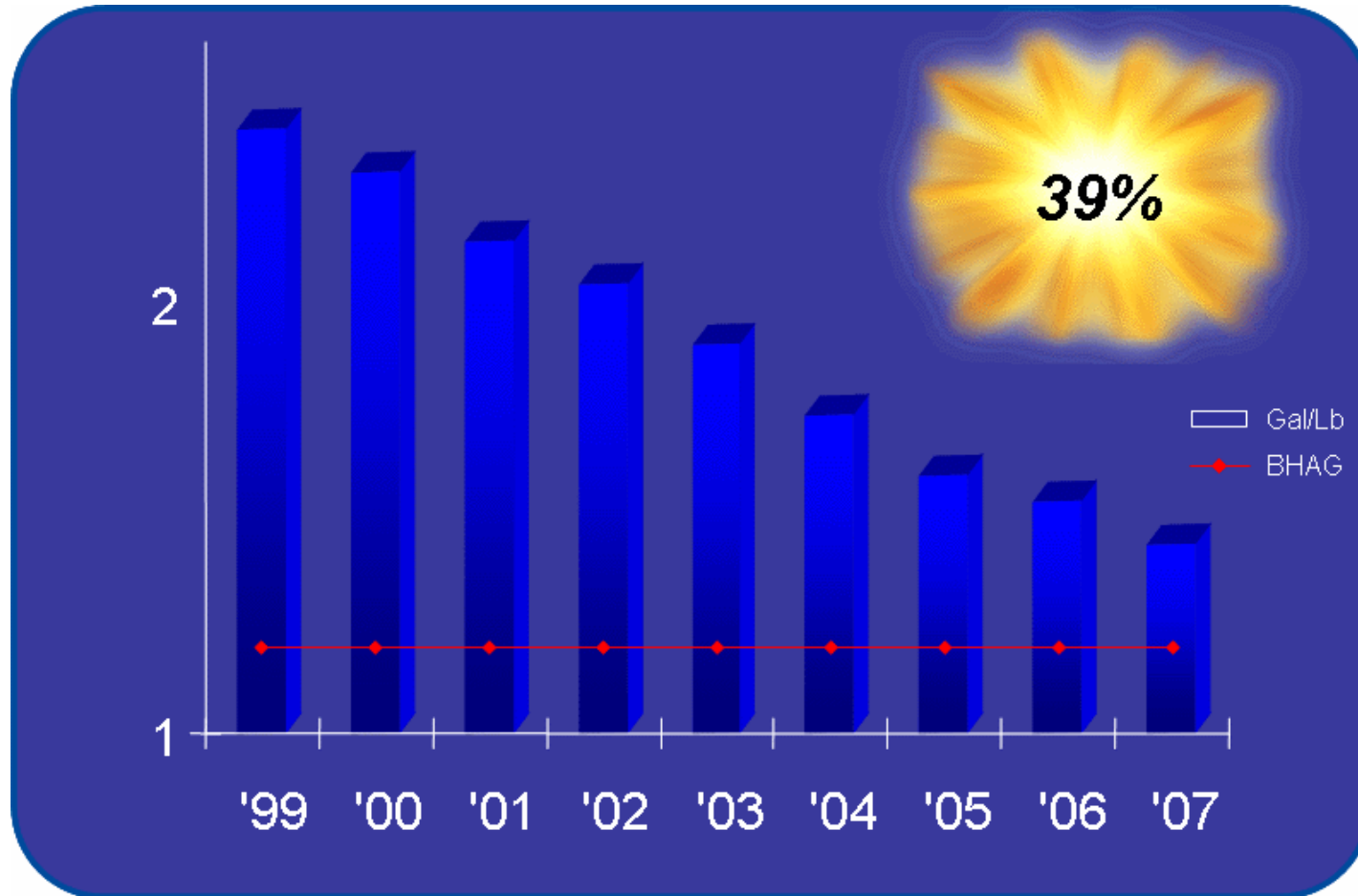
What Is A BHAG?

- It is tangible, energizing, highly focused. It requires no explanation. It should fall well outside the comfort zone. It should be so bold and exciting that it will continue to stimulate progress if the leadership disappears.

What Are Frito-Lay's BHAGs?

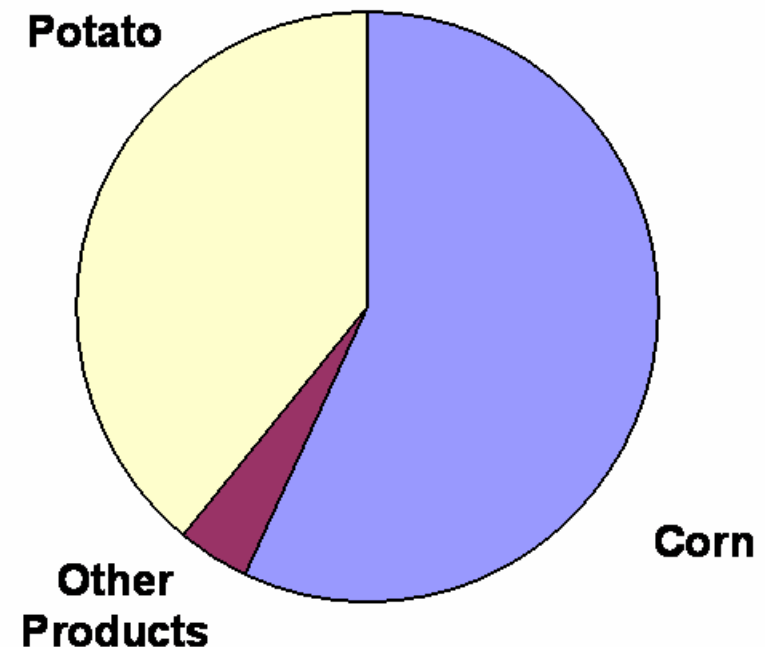
- Reductions in Energy & Water Consumption per Pound
- 50% Reduction In Water
- 30% Reduction In Thermal Fuels
- 25% Reduction In Electricity
- Measured vs. 1999 Baseline Usage

Results - Water



Water Consumption @ FLNA

- Raw Material...
 - Washing
 - Transportation
 - **Cooking**
 - **Cooling**
- Sanitation
 - **High Temp**
 - **High Pressure**

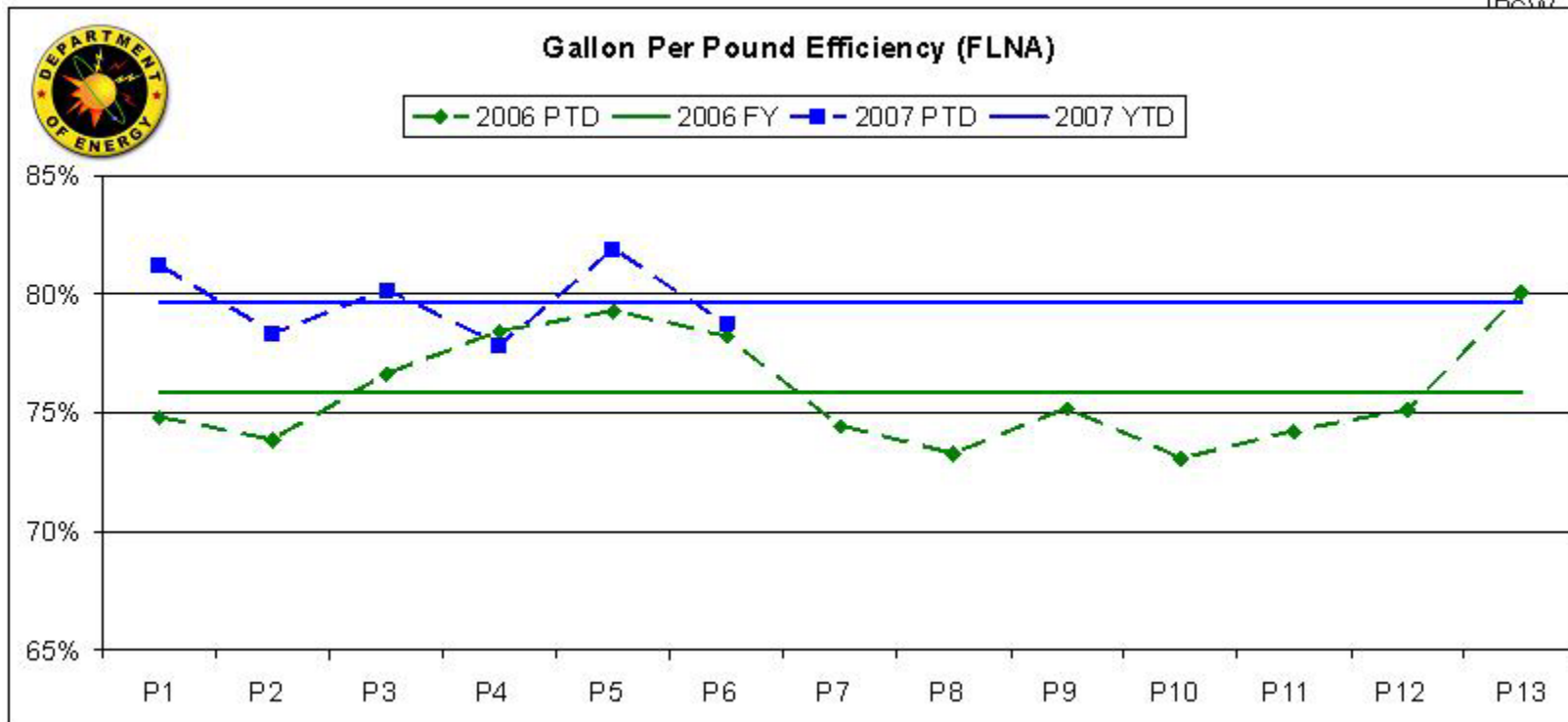




Gal/Lb Scorecard - Efficiency to Std

- Scorecard Rolled-Out in 2005
- Standards Created for Each Product Class
- Adjusted for Technology Where Cost Effective
- Sanitation Consumption Estimate Included
- Energy and Treatment Costs Included

Product	gal/lb FP
BCP	0
COOKIE	0
CRACK	0
EXT	0
FCC	2
FCCL	2
FCCLP	1
FCCP	1
OTHER	0
PC	2
PCBEL	1
PCJ	2
PCL	1
PCLW	2
PCT	1
PCW	2



	2
	2
	1
sa	1
YC	1
	0
	0
	1
	2
	0
	2
	1
	1
	2
	2
	2
	2



The Challenge - 95% Efficiency

The Game Plan

1. Implement a Water Conservation Program

A. Run Right - Perfect Utilities Wall

B. Engineer-Out Water Waste

C. Awareness, Training, & Accountability

2. Develop a Water Conservation Flight Plan

CASE STUDIES

#1 - Utility Wall

- Review Resource Consumption Daily (gal/lb and \$/lb)
- Compare to Standards and Prior Performance
- Take Immediate Action against Variances

Alpha Site Realized \$300M+
Savings in the First Year



CASE STUDIES

#2 - Low Water Corn Processing

- Retain Hot Kettle Heel Water for Next Batch
- One-Time Reuse of Corn Push Water
- Low Flow Corn Washer Nozzles

Energy Savings → ~\$1 MM/yr

Water Savings → ~\$2 MM/yr



CASE STUDIES

#3 - PC Slice Moisture Control & Fryer Stack Heat recovery

- 25% Less Water Carry-Over to Fryer
~18 Million Gallons/Year Available for Reuse
- Heat Recovery for Building, Process, and Sanitation
~5-6 Million Gallons/Year/Line
Condensate Available
for Reuse



CASE STUDIES

#4 - Sanitation Optimization

****120oF @ 600 psi****

➤ **More Flow ≠ Better Cleaning**

- Larger Orifice = More Flow and Lower Impact
- Use the Correct Spray Nozzle Type
- Spray Gun Nozzles on All Hoses
- Shut Down SOP's
- Audit/Inspect CIP Systems
- Automation



WIN - WIN



**CHESTER
WANTS
YOU
to conserve water**

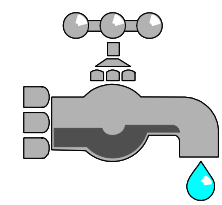
Report leaks ★ Shut off faucets when not using them ★ Be a smart water user



**Awareness
Is The Key
To Success**

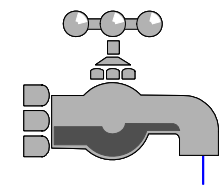
**One Little Leak
Costs Us A Lot!**

Pinhole leak:



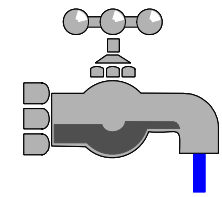
170 gallons per day
62,000 gallons per year
\$ _____ per year - water
\$ _____ per year - sewer

1/16" leak:



970 gallons per day
355,000 gallons per year
\$ _____ per year - water
\$ _____ per year - sewer

1/8" leak:

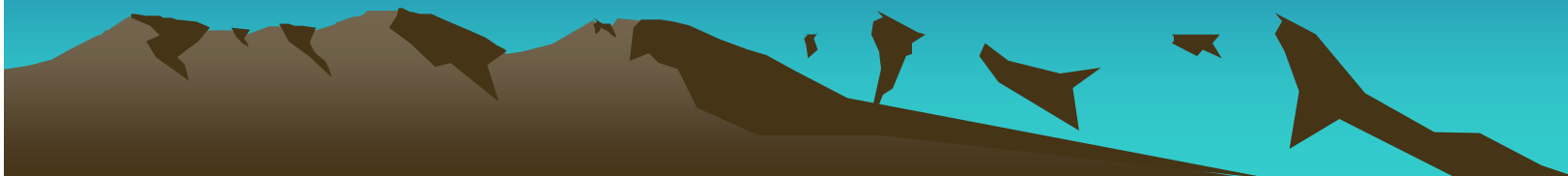


3,600 gallons per day
1.3 million gallons per year
\$ _____ per year - water
\$ _____ per year - sewer

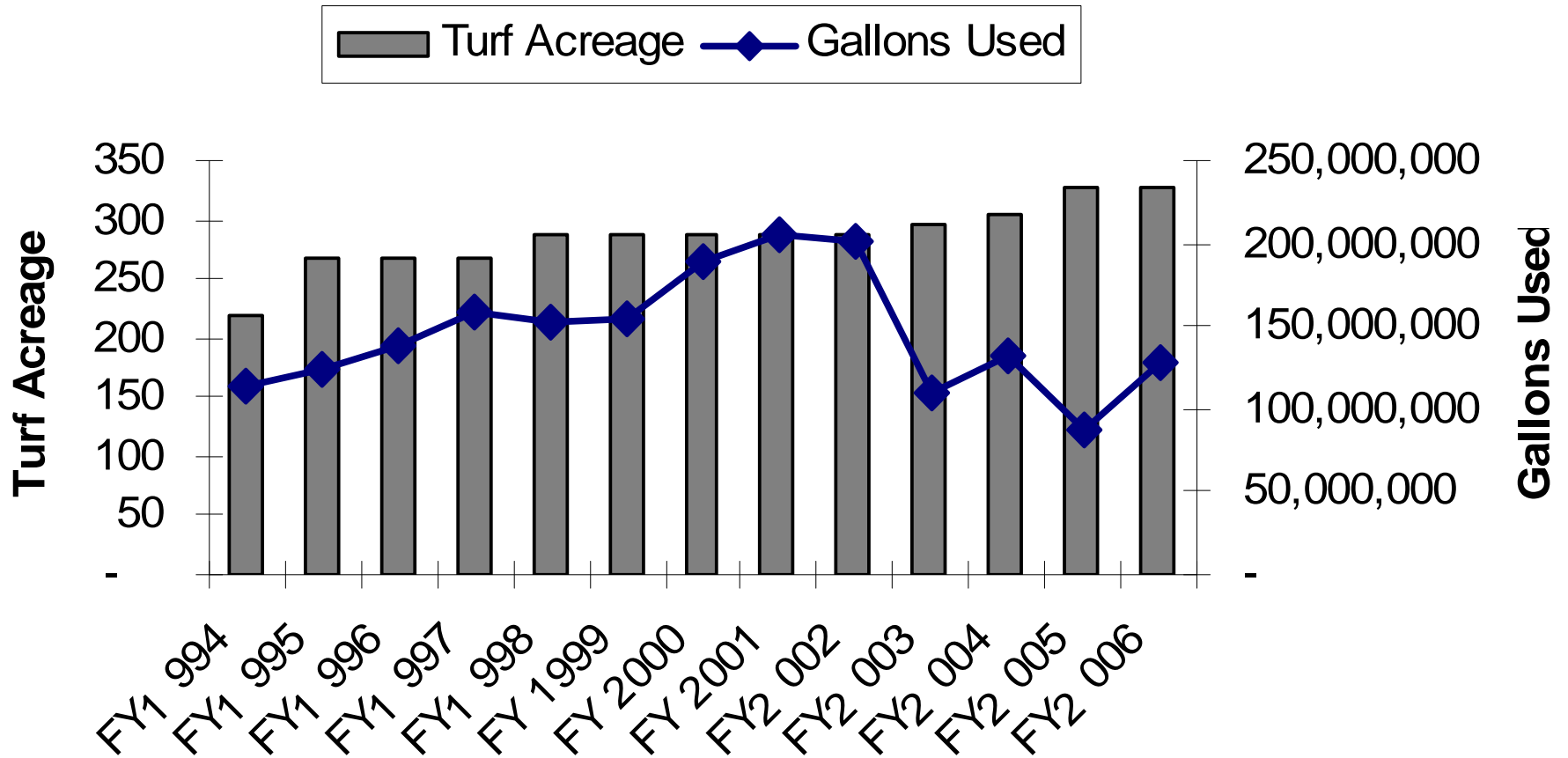


POUDRE SCHOOL DISTRICT

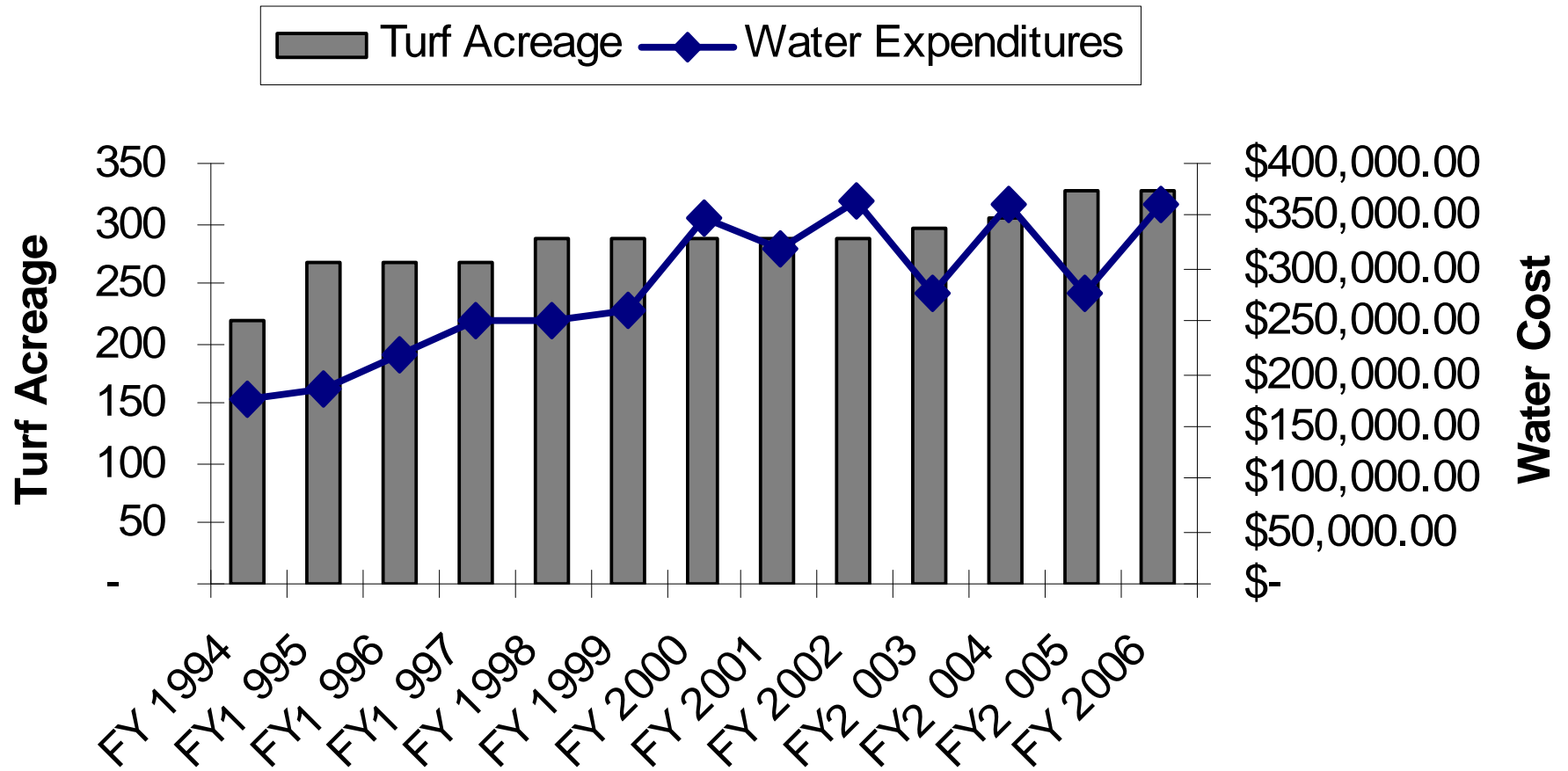
Saving Energy with Water Efficiency



PSD Water Use



PSD Water Cost



Creating a Baseline & Tracking

Month	Base year is FY 2001									
	FY 2002		FY 2003		FY 2004		FY 2005		FY 2006	
	<u>Savings</u>	<u>Percentage</u>	<u>Savings</u>	<u>Percentage</u>	<u>Savings</u>	<u>Percentage</u>	<u>Savings</u>	<u>Percentage</u>	<u>Savings</u>	<u>Percentage</u>
Nov	868,604	16.24%	2,405,231	44.98%	1,262,105	23.60%	2,317,088	43.33%	1,930,399	36.10%
Dec	-746,630	-27.99%	345,817	12.96%	-652,946	-24.48%	155,653	5.84%	135,165	5.07%
Jan	-1,774,103	-73.73%	-514,765	-21.39%	-445,408	-18.51%	-163,941	-6.81%	-218,680	-9.09%
Feb	-831,484	-38.94%	-992,191	-46.47%	-696,789	-32.63%	-655,235	-30.69%	-631,028	-29.55%
Mar	290,209	8.44%	489,697	14.23%	302,104	8.78%	566,211	16.46%	515,587	14.99%
Apr	-1,243,935	-27.18%	779,496	17.03%	-1,895,652	-41.42%	481,687	10.53%	-1,106,611	-24.18%
May	-3,940,628	-35.64%	4,683,691	42.36%	-6,030,934	-54.55%	2,627,816	23.77%	-4,197,090	-37.96%
Jun	7,630,067	27.54%	17,127,911	61.83%	15,926,301	57.49%	12,968,085	46.81%	4,843,674	17.48%
Jul	16,361,429	39.69%	22,667,373	54.99%	27,479,289	66.66%	17,965,822	43.58%	15,748,494	38.21%
Aug	13,192,677	35.38%	12,946,594	34.72%	23,290,379	62.46%	16,748,974	44.91%	14,779,884	39.63%
Sep	11,209,660	45.87%	5,401,672	22.10%	11,834,131	48.43%	5,860,869	23.98%	8,822,984	36.10%
Oct	3,822,935	39.17%	-1,499,616	-15.36%	4,902,610	50.23%	2,082,414	21.33%	753,015	7.71%
Total	44,838,801	26.06%	63,840,910	37.11%	75,275,190	43.75%	60,955,443	35.43%	41,375,793	24.05%



Domestic Water Use

YEAR	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
TOTAL GALLONS	172,546,367	127,443,763	108,411,855	96,800,020	111,085,574	130,665,224
W.Q. AVG.	2,409,936	3,535,210	2,794,095	3,008,319	2,624,112	2,641,118
DOMESTIC %	17%	33%	31%	37%	28%	24%
IRRIGATION %	83%	67%	69%	63%	72%	76%



Portfolio Manager

PORTFOLIO MANAGER

ACCOUNT INFORMATION
CONTACTS
CONTACT US
HELP
LOGOUT

Home > **My Portfolio**

Welcome: Stu Reeve

Summarized below are the facilities in your account. Groups and Views are provided below to help you customize the way in which you view your Portfolio. To improve system performance, users are strongly encouraged to create multiple Groups to help manage large Portfolios of facilities. **Select a facility to view or edit more detailed information about it.**

To view a column's definition, select the ⓘ icon next to the column header.

Portfolio Average Rating

Baseline Rating: 65 <small>Facilities Included: 47</small>	Current Rating: 57 <small>Facilities Included: 48</small>
Portfolio Adjusted Percent Energy Reduction	
No Reduction <small>Facilities Included: 48</small>	
<small>Averages are weighted by Total Floor Space.</small>	
<small>More about Baselines</small>	
<small>More about Adjusted Percent Energy Reduction</small>	

[Add Facility](#) | [ENERGY STAR Leaders](#) | [Share Facilities](#) | [Update Multiple Meters](#) | [Request Energy Performance Report](#)

[Download this View in Excel](#)

GROUP: All Facilities Create Group | View All

VIEW: Summary: Facilities Create View | Edit View | View All

Search Facility Name: Search

All # [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Results 1 - 49 of 49

Facility Name ⓘ	Current Rating (1-100) ⓘ	Adjusted Percent Energy Reduction ⓘ	Total Floor Space (Sq. Ft.) ⓘ	Energy Use Alerts ⓘ	Current Energy Period Ending Date ⓘ	Eligibility for the ENERGY STAR ⓘ	Last Modified ⓘ
Bacon Elementary	78	No Reduction	65,299		04/30/2007	Eligible to Apply for the ENERGY STAR	06/14/2007
Barton Elementary	35	No Reduction	32,018		03/31/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/14/2007
Bauder Elementary	71	No Reduction	63,156		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/14/2007
Beattie Elementary	50	No Reduction	45,775		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/18/2007
Bennett Elementary	53	No Reduction	50,492		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/18/2007
Blevins Junior High	34	No Reduction	104,635		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/18/2007
Boltz Junior High	22	No Reduction	88,698		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/18/2007
Centennial High School	48	No Reduction	39,967		04/30/2007	Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/19/2007

Computerized Irrigation Management



Irrigation Weather Station and Raw Water System



Synthetic Turf





*Synthetic
playfield...*



*Raw water
irrigation...*

Xerascaping





Embodied Energy in Water

- Distribution/conveyance/
pumping
- Treatment (water and
wastewater)



Questions?



Stu Reeve PSD

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Questions & Discussion

Selected Water Resources



- US EPA's Water Sense program
Resources on:
 - High efficiency toilets
 - High efficiency faucets
 - Landscaping irrigation
 - Irrigation control technologies
- ENERGY STAR – Portfolio Manager
 - Water meter tracking
- ENERGY STAR Industrial Energy Guides
 - Some water/energy process improvements and technologies discussed
- Home Energy Magazine – Water / Energy Special Issue



Upcoming Meetings



- World Energy Engineering Congress
Atlanta GA August 15 – 17
Multiple ENERGY STAR Tracks
www.energycongress.com
- IEEE Industrial Energy Workshop
Baltimore MD October 22 – 23
<http://ieew2007.googlepages.com>

Upcoming Web Conferences



August 8 – Energy Auditing

September 19 – Retro-commissioning

October 17 – Energy and Greenhouse Gas Management

Download past web conference presentations at:
www.energystar.gov/index.cfm?c=networking.bus_networking

Questions or comments? Contact: tunnessen.walt@epa.gov



Thank You!