

# This presentation premiered at WaterSmart Innovations

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# What do a Jail, an Ice Skating Rink and Hotels have in Common?

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# Overview

- ▶ City of Santa Rosa
- ▶ Water–Use Efficiency Program
- ▶ Commercial, Industrial, Institutional Program
- ▶ Sustained Reduction Rebate
- ▶ Case Studies
- ▶ Q&A



# City of Santa Rosa

- ▶ Population = 169,000
- ▶ Provide service to:
  - 44,000 Residential
  - 3,000 MFR
  - 3,000 CII
  - 1,700 Dedicated irrigation
  - 39 Receiving recycled water
- ▶ Deliver approx 20,000 acre–feet of water per year
- ▶ Treat approx 6 billion gal/year



# Water-Use Efficiency Program

- ▶ Saving 4,500 acre feet/year
  - Reducing GHG's by over 18 million lbs per year
- ▶ 50,000 toilets upgraded
- ▶ 1.9 million sqft lawn removed
- ▶ Utilizing real time ETo budget based tiered rate billing
- ▶ Creating training/tools to support the industry



# CII Program

- ▶ Sustained Reduction Rebate
- ▶ High Efficiency Urinal Rebate
- ▶ Best Available Technologies
- ▶ Water Conservation Survey
- ▶ High Efficiency Clothes Washer Rebate
- ▶ Rainwater Harvesting Rebate



# Sustained Reduction Rebate

- ▶ \$200/1,000 gallons sustainable reduction in water use/waste water flow
- ▶ Pre/post metering
- ▶ ½ rebate paid (engineered estimate)
- ▶ Final payment = actual sustained savings
  - 12 months post
  - Cost of materials vs. actual savings
- ▶ 36 million gal saved annually



# Case Studies

- ▶ Main Adult Detention Facility
- ▶ Ozone Laundry System
- ▶ Snoopy's Home Ice Arena





# Main Adult Detention Facility

## ▶ Water use related problems

### 1. Security and Safety

- Inmates purposely flood cells by abusing plumbing
  - Plug sinks
  - Flush down clothing, bedding, contraband, plastic bags
- Allows inmates to 'get out' while staff resolves the issue
  - Requires additional security staff/cost
  - Sewer backups= sanitation issues
- Creating problems with municipal sewer system

# Main Adult Detention Facility

## ▶ Water use related problems (cont)

### 2. Excessive Consumption

- 3.5–10 gallons per flush per toilet (625 cells)
- Up to 44 flushes per day
- Average consumption
  - 2,400,000 gal/mth
  - 116 gallons/day per person



# Main Adult Detention Facility

- ▶ Solution: plumbing control system
  - Automate toilet/sinks with electronic valves
    - Limit flushes per hour
    - Limit volume per flush
  - Replace high volume toilet bowls



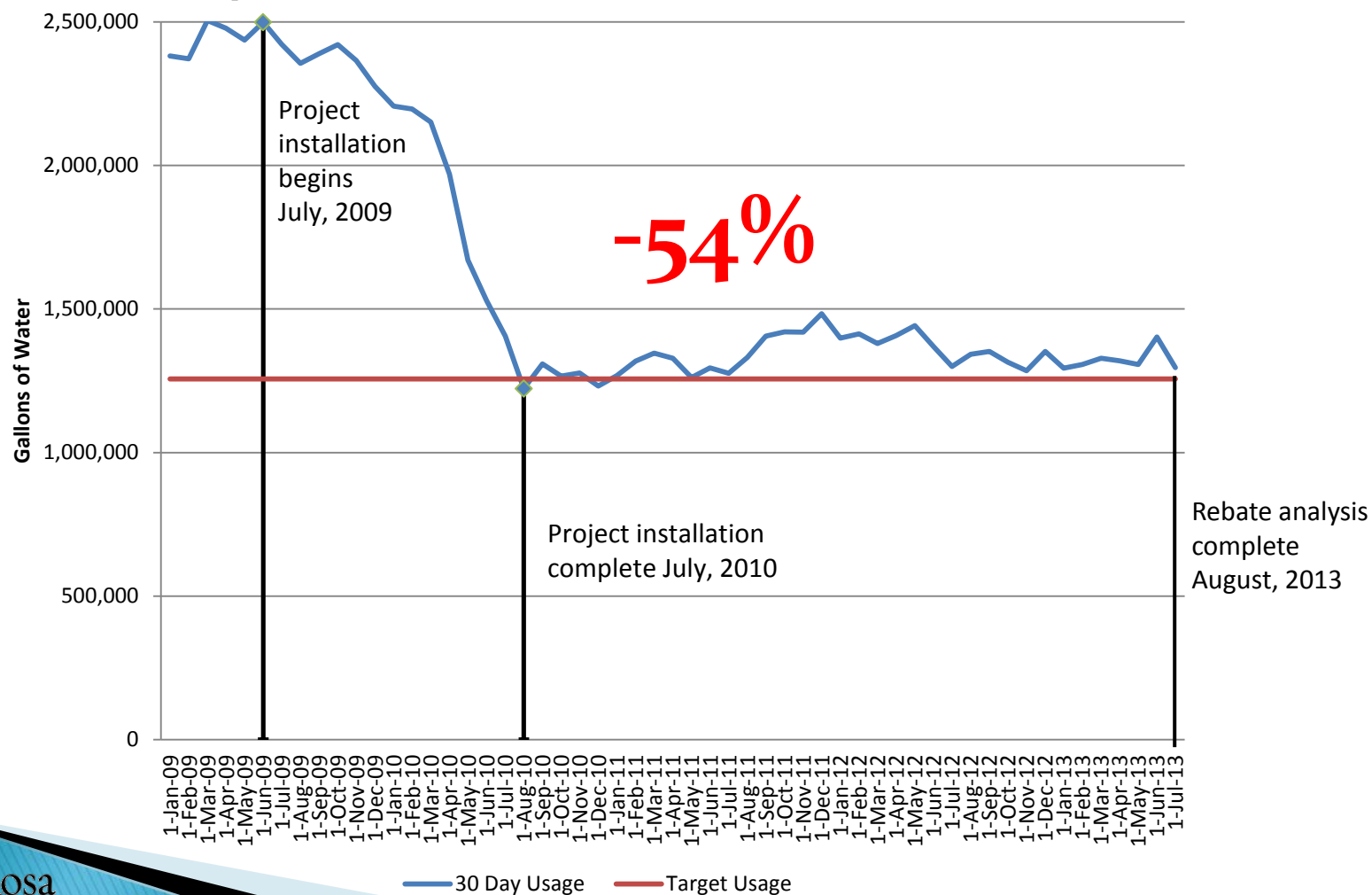
# Main Adult Detention Facility

- ▶ Solution: plumbing control system (cont)
  - Wire system to existing touch screen control
    - Water now controlled by guards/staff

Cell #	Name	Flushes Per Hr	Flushes This Hour	Flushes Today	Cell Shutdown	Cell Lockout/Reset
C01		2	0	0	Cell Shutdown	Lockout Reset
C02		2	0	2	Cell Shutdown	Lockout Reset
C03		4	0	2	Cell Shutdown	Lockout Reset
C04		4	0	3	Cell Shutdown	Lockout Reset
C05		2	2	2	Cell Shutdown	Lockout Reset
C06		2	0	10	Cell Shutdown	Lockout Reset
C07		4	1	6	Cell Shutdown	Lockout Reset
C08		4	2	20	Cell Shutdown	Lockout Reset
C09		4	0	0	Cell Shutdown	Lockout Reset
C10		4	0	0	Cell Shutdown	Lockout Reset
C11		4	0	2	Cell Shutdown	Lockout Reset
C12		2	0	9	Cell Shutdown	Lockout Reset
C13		4	0	6	Cell Shutdown	Lockout Reset
C14		4	0	5	Cell Shutdown	Lockout Reset
C15		4	2	10	Cell Shutdown	Lockout Reset
C16		2	0	7	Cell Shutdown	Lockout Reset
C17		4	1	6	Cell Shutdown	Lockout Reset
C18		2	1	13	Cell Shutdown	Lockout Reset
C19		2	1	8	Cell Shutdown	Lockout Reset
C20		2	1	1	Cell Shutdown	Lockout Reset

# Main Adult Detention Facility

## ▶ Consumption results



# Ozone Laundry System

- ▶ Attachment to existing clothes washers
  - Saves water and energy (no hot water)
  - \$10,000–\$35,000 to install commercial system
  - Water and energy rebates
  - Other savings
    - Reduced drying
    - Linen replacement



# Ozone Laundry System

- ▶ 2010 Pilot Study
  - 15 California hospitality centers
  - Meter data before and after – hot and cold H<sub>2</sub>O
  - Number of rooms varied from 44–805

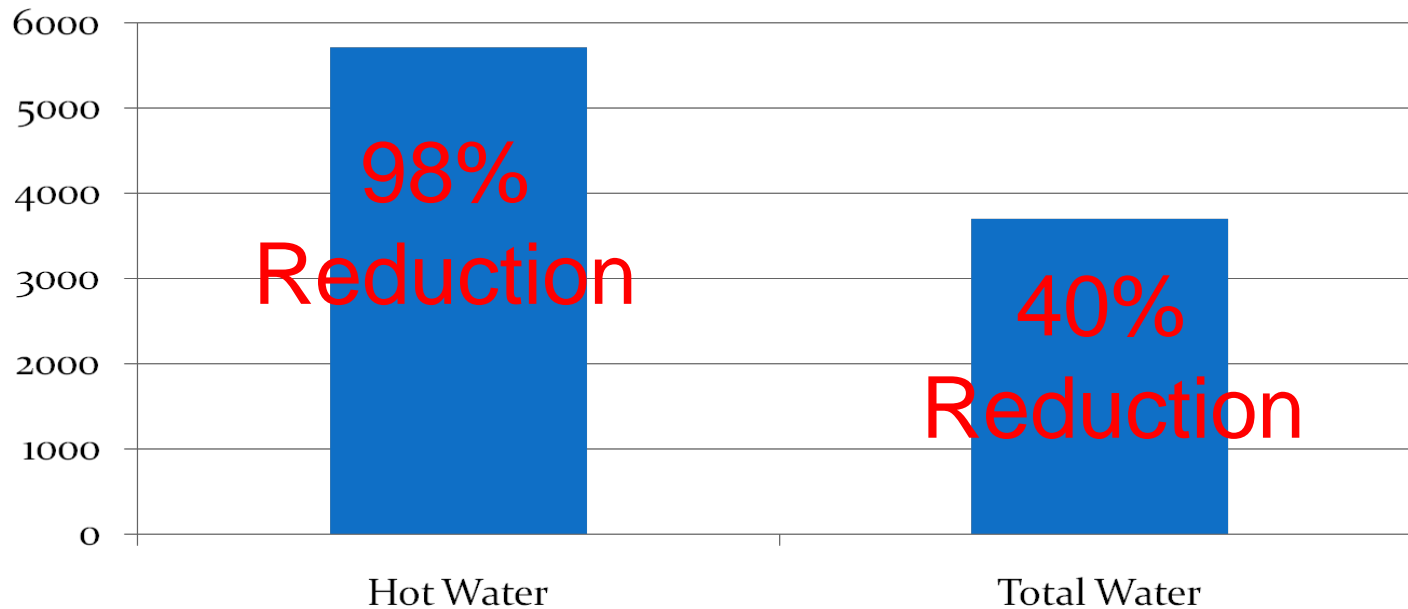


# Ozone Laundry Pilot

## Savings



Water Savings Per Room Per Year



2.2 gallons per pound pre installation  
1.3 gallons per pound post installation

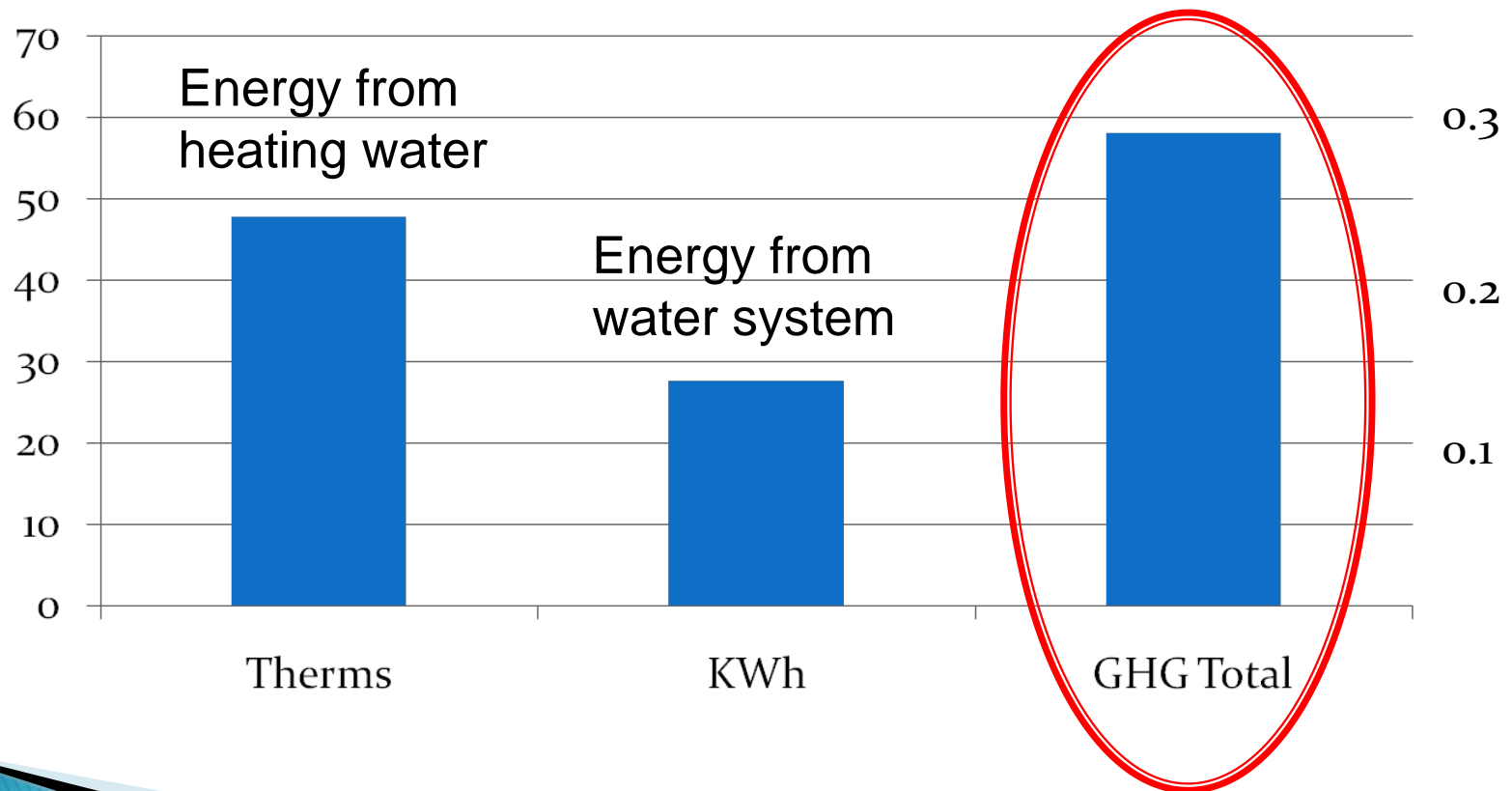


# Ozone Laundry Pilot

Equivalent to removing  
125 Cars from the Fleet

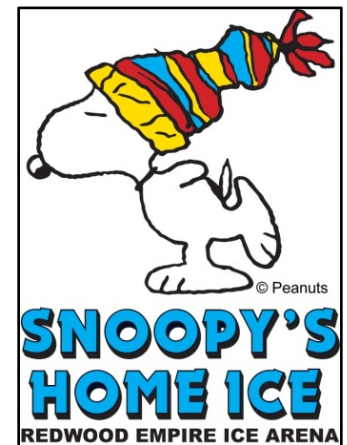
Savings

Energy Savings Per Room Per Year



# Snoopy's Home Ice

- ▶ Santa Rosa institution since 1969
- ▶ Water-use efficiency improvements
  1. Behavior change & Recirculating hot water ice melting system
  2. Indoor plumbing retrofit
  3. Ice maintenance water reuse system



# Snoopy's Home Ice

- ▶ Water-use efficiency improvements
  - Behavior change & recirculating hot water ice melting system
    - Stopped using fire hose to melt ice
    - Radiant heat at bottom of snow pit
  - Average consumption
    - Before = 430,000 gal/mth
    - After = 198,000 gal/mth



# Snoopy's Home Ice

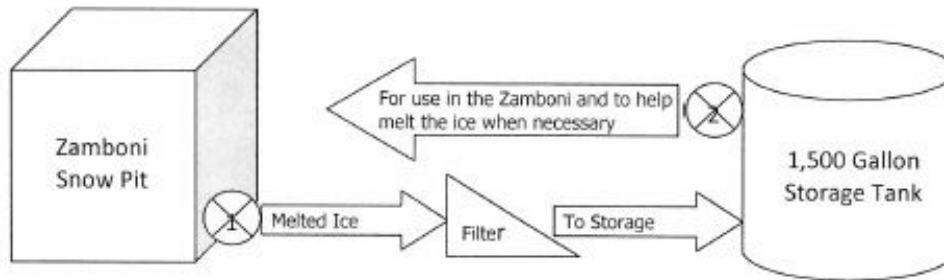
- ▶ Water-use efficiency improvements
  - Indoor plumbing retrofit
    - All indoor fixtures upgraded to high efficiency (toilets, faucets aerators, etc.)
  - Average consumption
    - Before = 198,000 gal/mth
    - After = 167,000 gal/mth



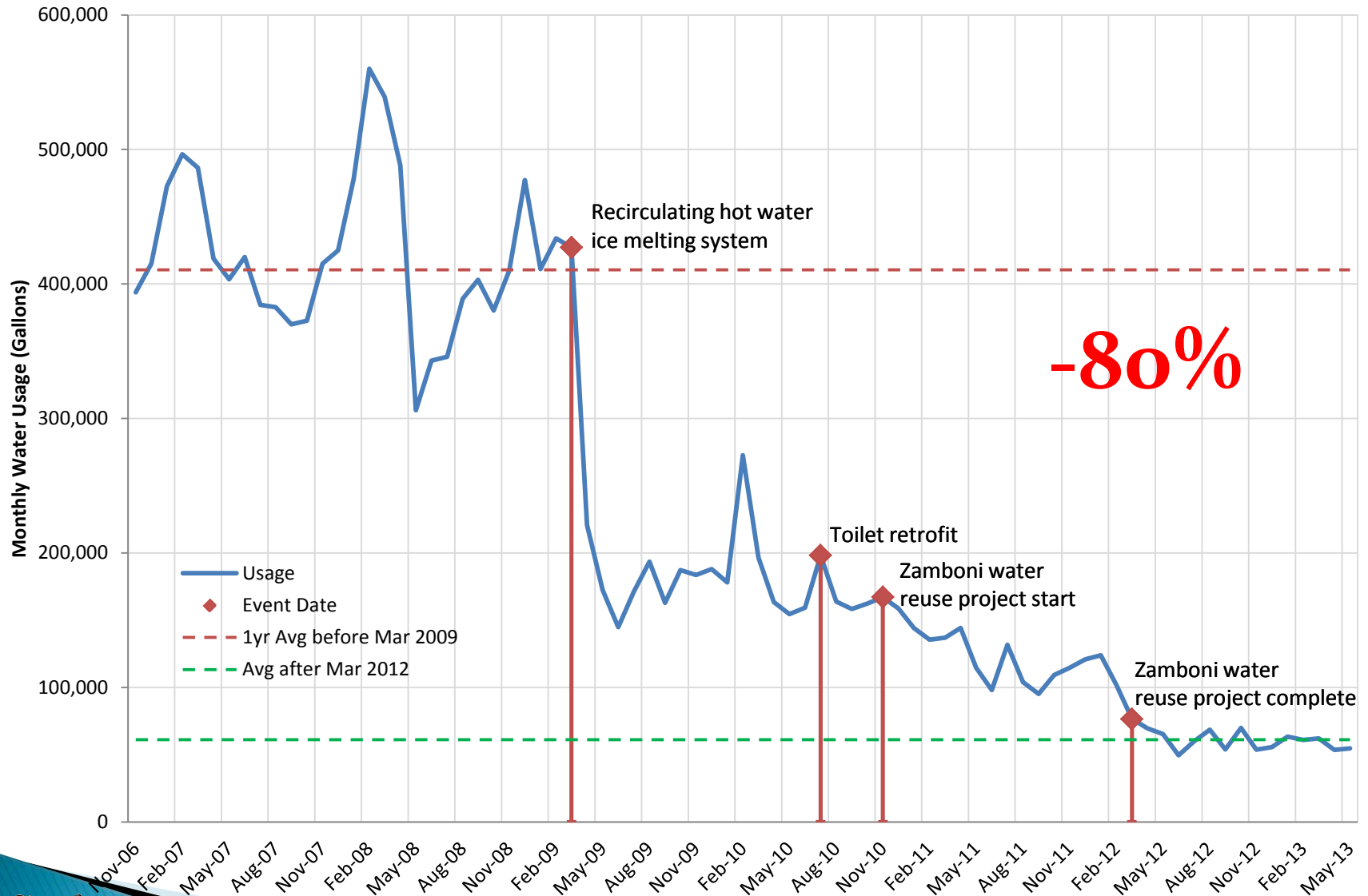
# Snoopy's Home Ice



- ▶ Water-use efficiency improvements
  - Ice maintenance water reuse system
    - Ice maintenance = 100,000 gal/mth
    - Discarded into snow pit/melts into sewer
    - Recirculation system: storage, filtration, pumps
  - Average consumption
    - Before = 167,000 gal/mth
    - After = 72,000 gal/mth



# Snoopy's Home Ice



# Questions



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