

# The Bottom Line on Going Green



Joe Myhra

Director, Engineering & Maintenance

Seattle Mariners



# Overview

- Why go Green?
- What can you do to get started?
- What are the results?
- Focus on water conservation
- What's Next?
- Conclusion



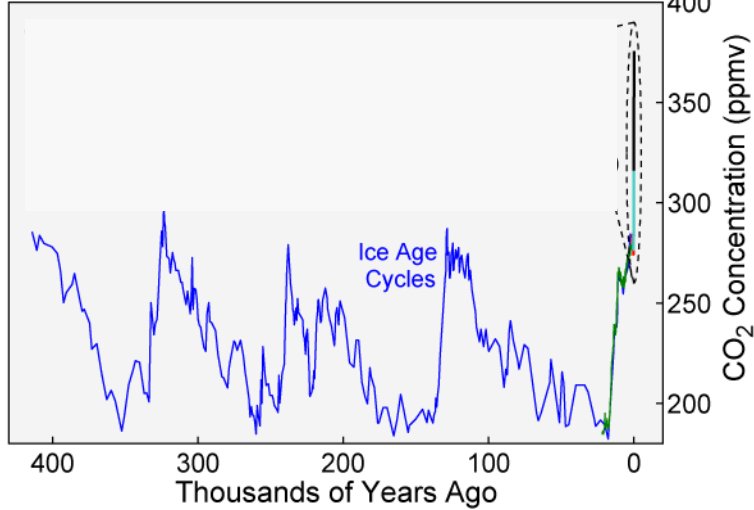
# Why Go Green???

- Owners and CFOs like the savings
- Public is starting to expect it
- Responsibility as good corporate citizens
- Develop marketing opportunities
- Can we afford not to?

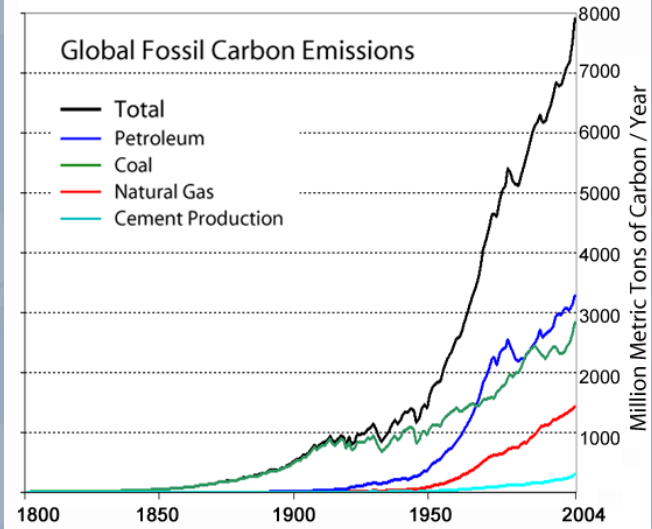


# Why Go Green???

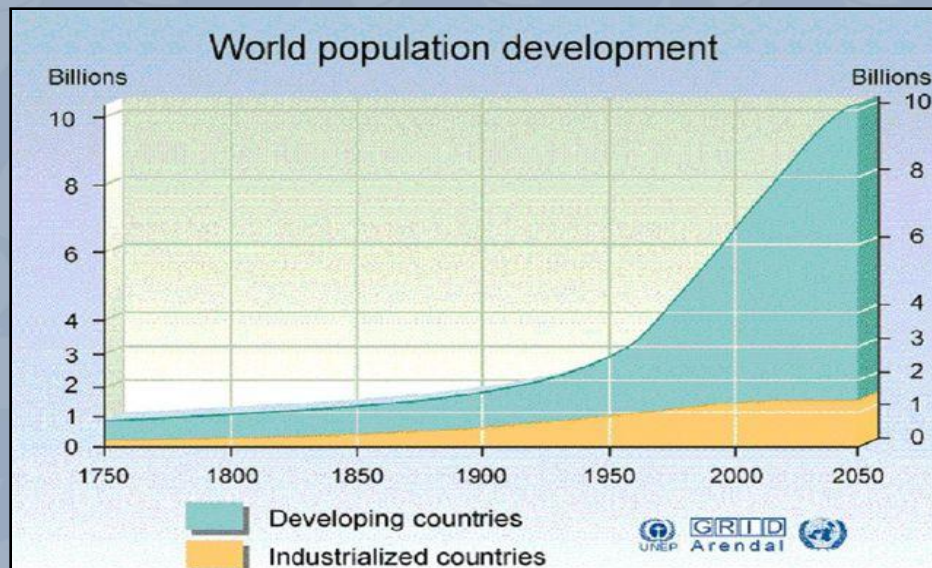
### Carbon Dioxide Variations



### Global Fossil Carbon Emissions

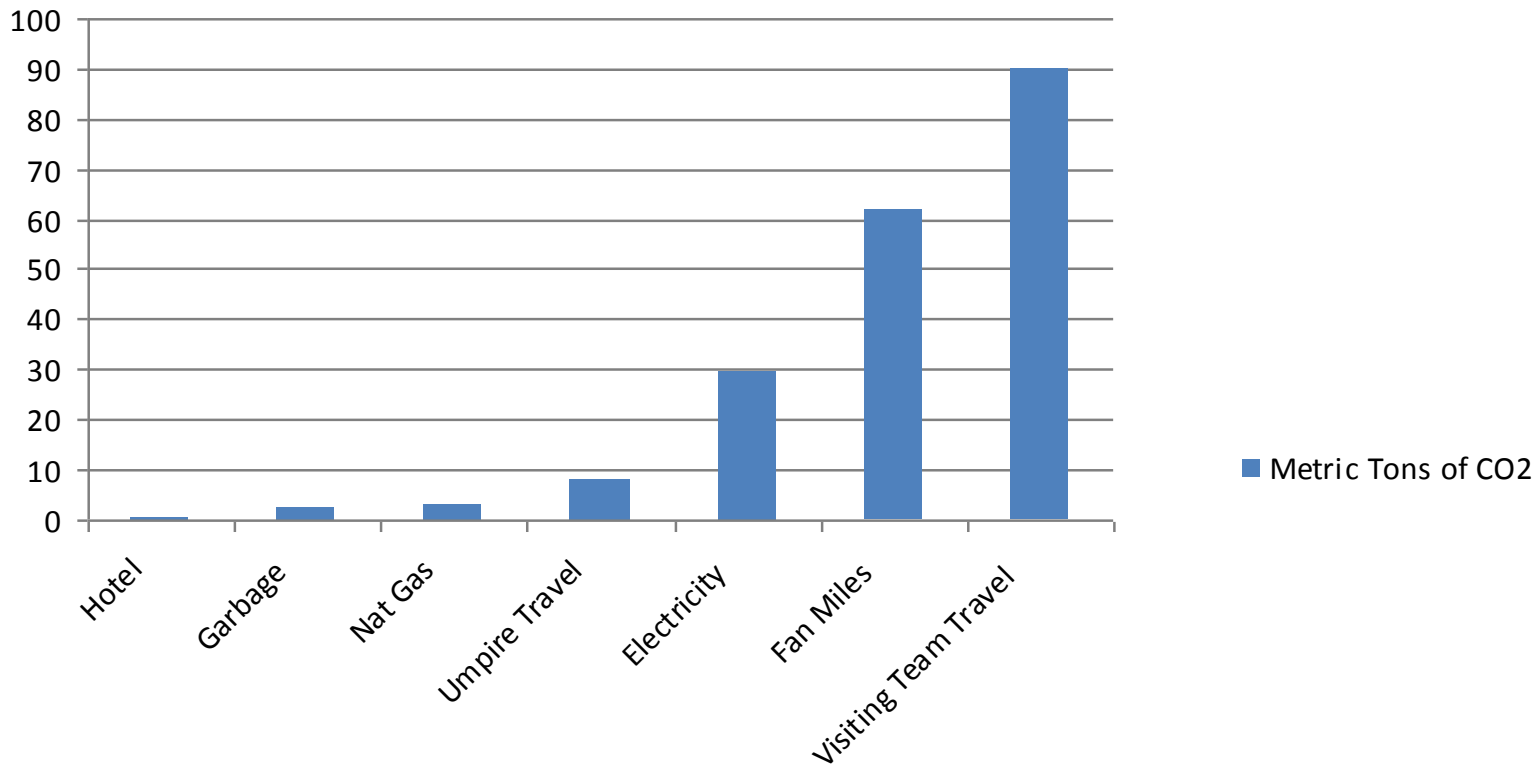


### World population development



# Why Go Green???

## 2010 Earth Day Game Carbon Off-sets



# Why Go Green???

	Consumption				
	2006	2007	2008	2009	
Electric (KWh)	13,194,750	11,694,997	11,448,675	10,977,335	17%
Natural Gas (Therms)	305,552	194,574	206,928	170,650	44%
Water (CCF)	26,898	27,653	24,154	24,793	8%
Sewer (CCF)	21,747	22,431	19,027	19,412	11%

	Cost			
	2006	2007	2008	2009
Electric (KWh)	\$ 755,389	\$ 562,694	\$ 598,198	\$ 513,440
Natural Gas (Therms)	\$ 349,135	\$ 248,474	\$ 231,080	\$ 211,580
Water (CCF)	\$ 94,572	\$ 90,735	\$ 80,767	\$ 104,395
Sewer (CCF)	\$ 143,492	\$ 166,265	\$ 148,220	\$ 169,724
TOTAL	\$ 1,342,588	\$ 1,068,168	\$ 1,058,265	\$ 999,139
<b>\$ SAVED</b>	<b>\$ -</b>	<b>\$ 274,420</b>	<b>\$ 284,323</b>	<b>\$ 343,449</b>

**3 yr. Savings = \$902,192**



# What Can You do to get Started?

## Low or No Cost Energy Conservation Measures

- Turn off Equipment
  - 1) Kitchen Equipment
  - 2) HVAC Equipment
- Adjust Temperature Set Points appropriately
- Utilize Lighting Controls
- Reduce Infiltration, keep doors & windows closed
- Upgrade Controls to your major energy users
  - 1) Domestic Boilers
  - 2) Check Schedule & temperature setting
- Install Aerators at Restroom Faucets
- Implement supervised shut down procedures
- Establish immediate feedback loops
- Establish a baseline and begin to measure
- Set goals for conservation within your operation



# What Can You do to get Started?

## Formulate a Sustainability Program

### - Recycling Program

Kitchen & Concessions Recycling Quick Reference Sheet		
	<ul style="list-style-type: none"> <li>- Food Waste</li> <li>- Paper towels</li> <li>- Receipts</li> <li>- Beer Cups (brown strip)</li> <li>- Serving Trays</li> </ul>	<ul style="list-style-type: none"> <li>- Paper napkins</li> <li>- Wax paper</li> <li>- Coffee Grounds &amp; filter</li> <li>- Soiled cardboard bits</li> <li>- Serving boats</li> </ul>
	<ul style="list-style-type: none"> <li>- Plastic Containers (Clean)</li> <li>- Metal Containers (Clean)</li> <li>- Glass Containers (Clean)</li> <li>- Hot Dog bun bags</li> <li>- Beer Cup plastic sleeves</li> <li>- Soda Cup plastic sleeves</li> </ul>	<ul style="list-style-type: none"> <li>- Ice Bags</li> <li>- Shrink wrap</li> <li>- Plastics 3 – 6</li> <li>- Clean cellophane</li> <li>- Absolutely NO FOOD WASTE</li> </ul>
	<ul style="list-style-type: none"> <li>- Tin foil</li> <li>- Plastic gloves</li> <li>- Blue cloths</li> <li>- Pepsi cups / cup lids</li> <li>- Condiment containers</li> </ul>	<ul style="list-style-type: none"> <li>- French Fry bags</li> <li>- Ice cream containers</li> <li>- Coffee bags</li> <li>- Potato Chip Bags</li> <li>- Cracker Jack bags</li> </ul>
		<ul style="list-style-type: none"> <li>- Red rope bags</li> <li>- Ivars / Kid Valley logo cups</li> </ul>



### - Procurement Plan

- 1) Restroom products => 100% recycled fiber
- 2) Office paper => 100% post consumer fiber
- 3) All locally sourced in state of WA

### - Green Cleaning Program

- 1) Following LEED accreditation guidelines



# What Can You do to get started?

## Economical Energy Conservation Solutions

### 1) OOT scoreboard replacement

- Replaced old incandescent board w/ LED
- Reduces utility costs \$50,000 / yr
- SCL rebate of \$153,000
- Saves 1,000,000 kWh / yr



### 2) Replace incandescent lamps w/ LED on Suite Level

- Reduction of 85,000 kWh / yr
- Annual Utility Savings \$4,292.80 / yr
- Rebate incentive \$18,700
- Simple payback => 3.48 yrs



# What Can You do to get Started?

## Economical Energy Conservation Solutions

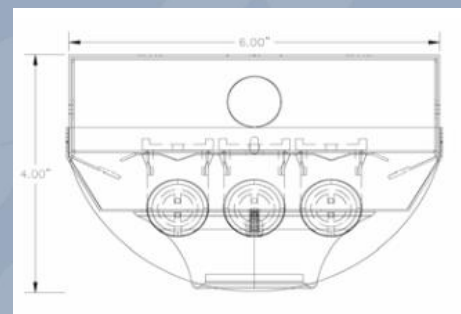
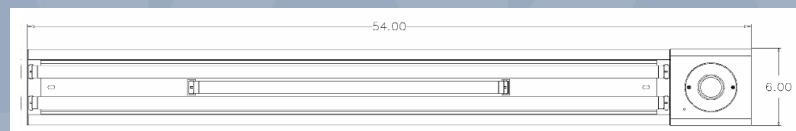
### 3) Install Dedicated heat pumps

- Utility savings of \$24,000 / yr
- Reduce run time on large AHUs
- ROI of 12%
- Simple payback



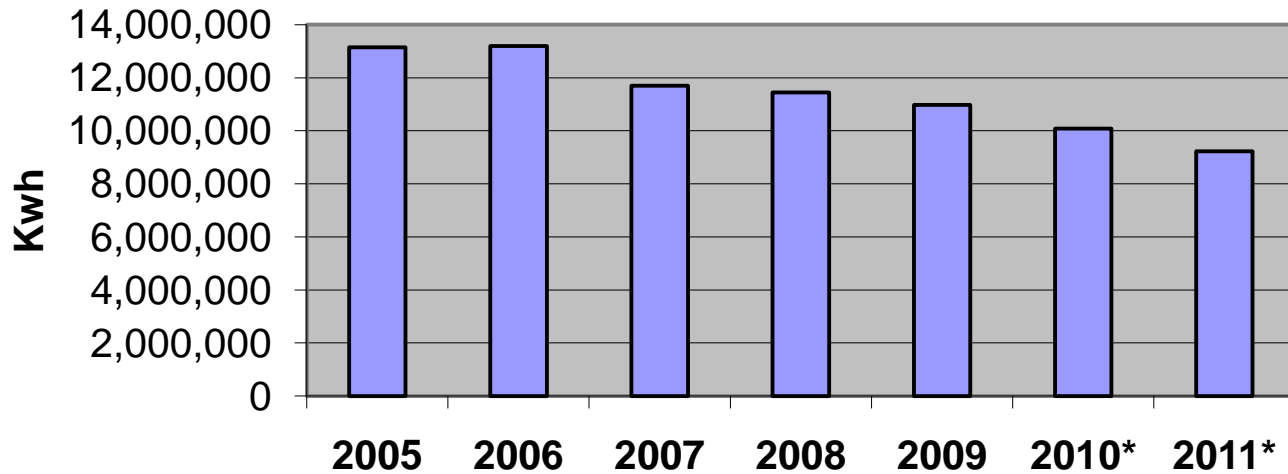
### 4) Parking Garage Lighting Retro-fit

- Reduction of 520,000 kWh / yr
- Annual Utility Savings \$27,000 / yr
- Rebate incentive of \$130,000
- Simple payback => 3.7 yrs



# What are the Results???

## Safeco Field Electrical Consumption

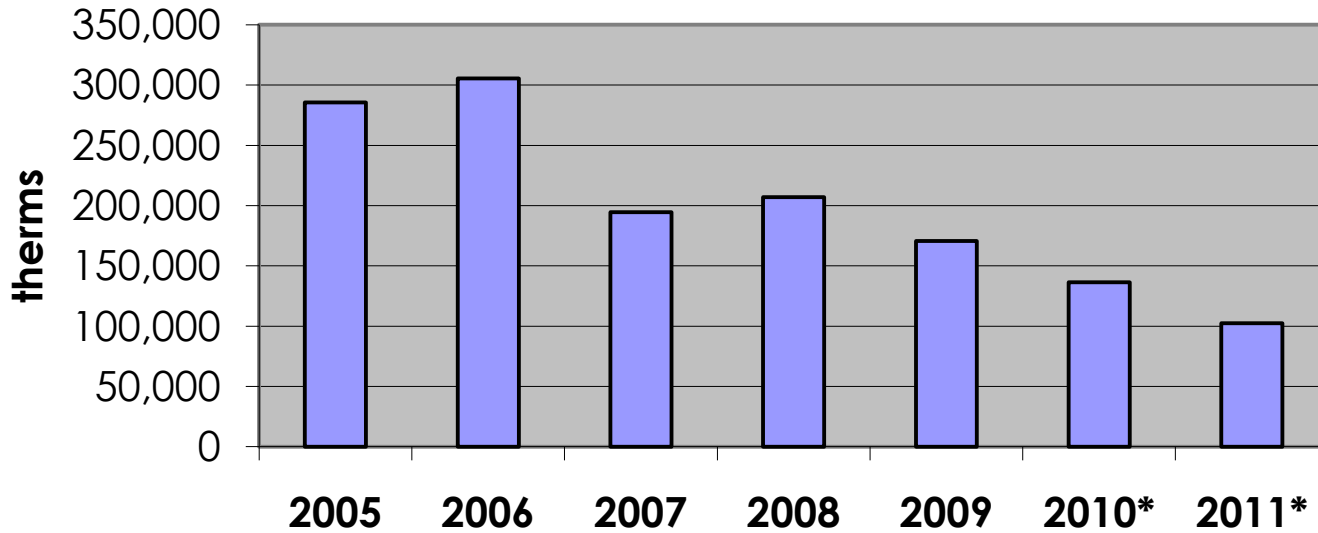


Total Annual Electrical Use (kwh)				Percent Savings from 2006
Year	Ballpark	Garage	Total	
2005	12,542,128	610,450	13,152,578	
2006	12,577,540	617,210	13,194,750	
2007	11,103,127	591,870	11,694,997	11.37%
2008	10,863,485	585,190	11,448,675	13.23%
2009	10,436,035	539,090	10,975,125	16.82%
2010*	9,657,137	421,290	10,078,427	23.62%
2011*	8,985,733	235,600	9,221,333	30.11%
* = estimated				



# What are the Results?

## Safeco Field Natural Gas Consumption



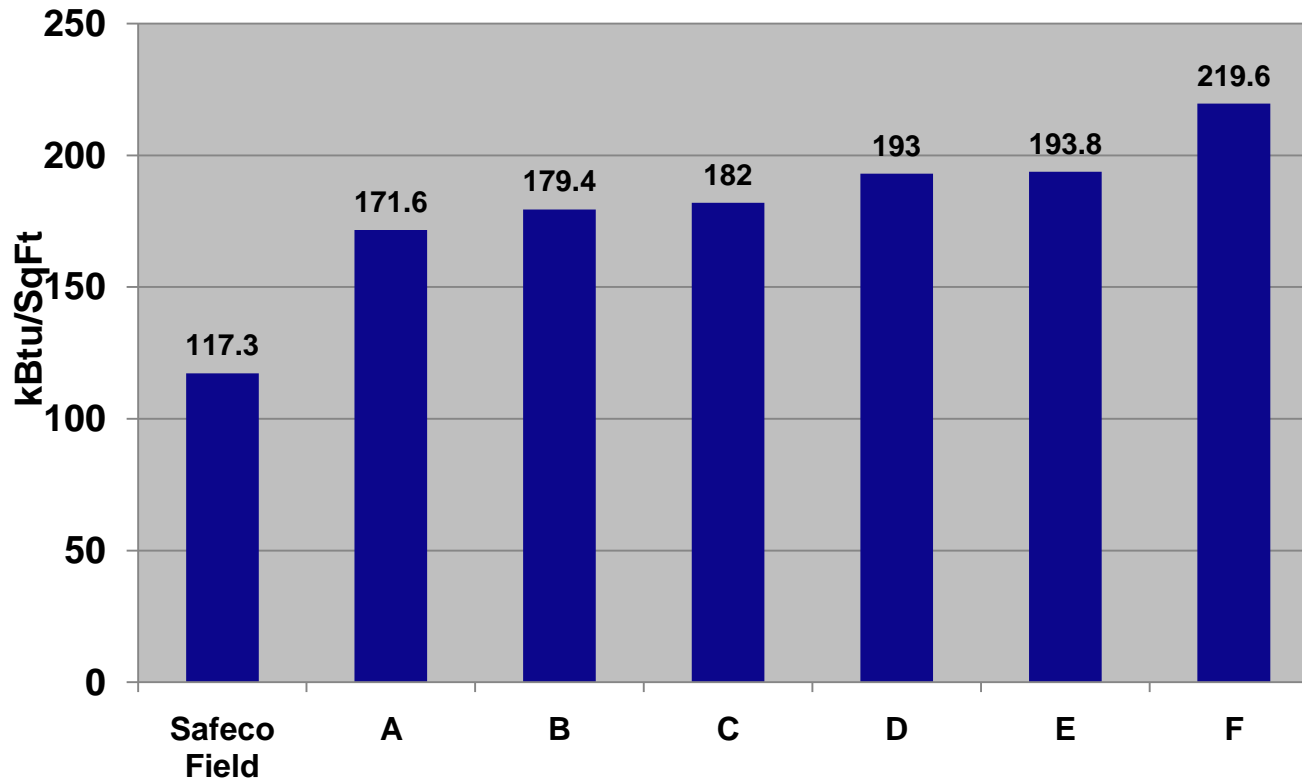
Total Annual Natural Gas Use (therms)			Percent Savings from 2006
Year	Total		
2005	285,689		
2006	305,553		
2007	194,574		36.32%
2008	206,929		32.28%
2009	170,651		44.15%
2010*	136,543		55.31%
2011*	102,436		66.48%

\*=estimated

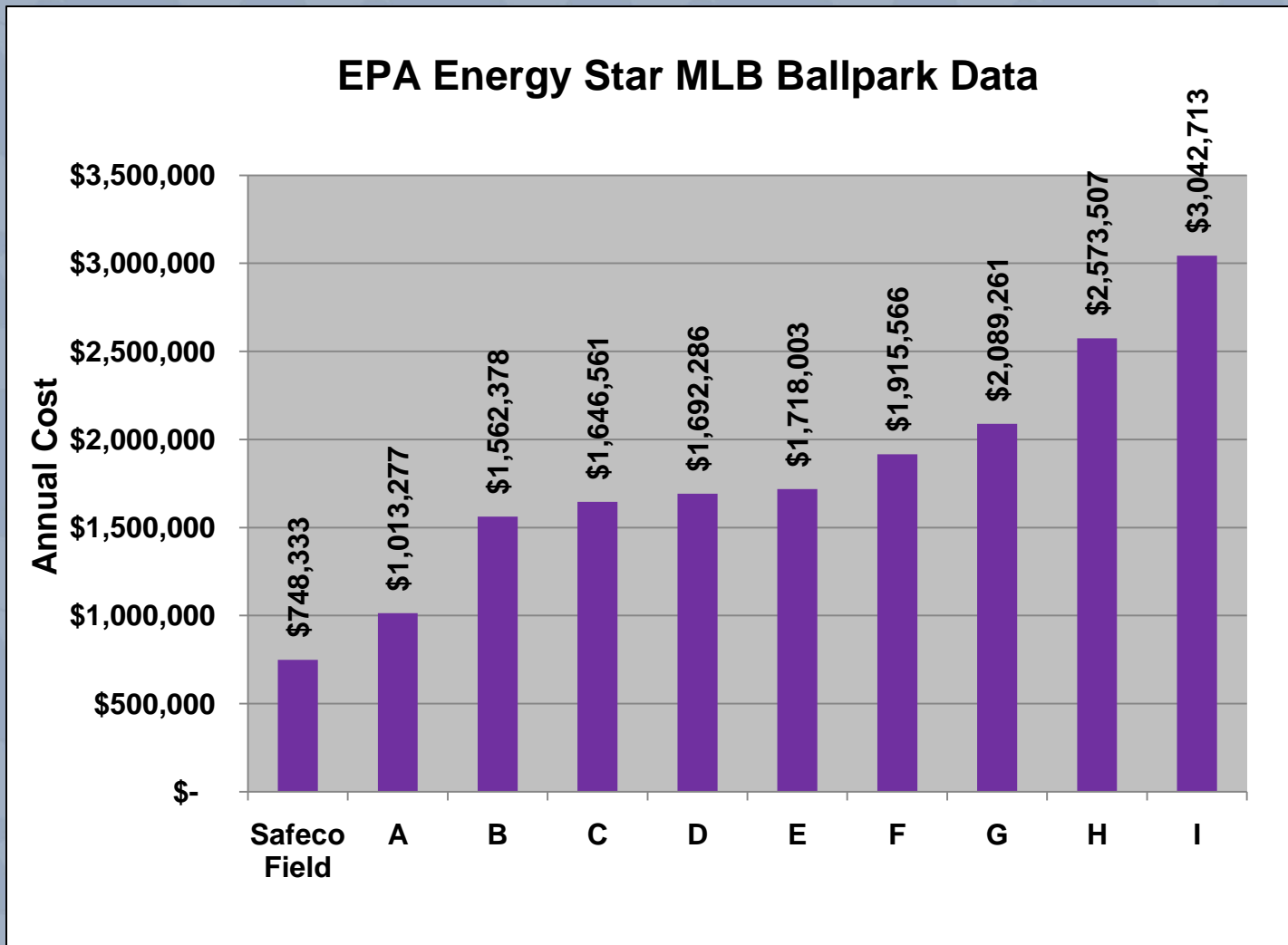


# What are the Results?

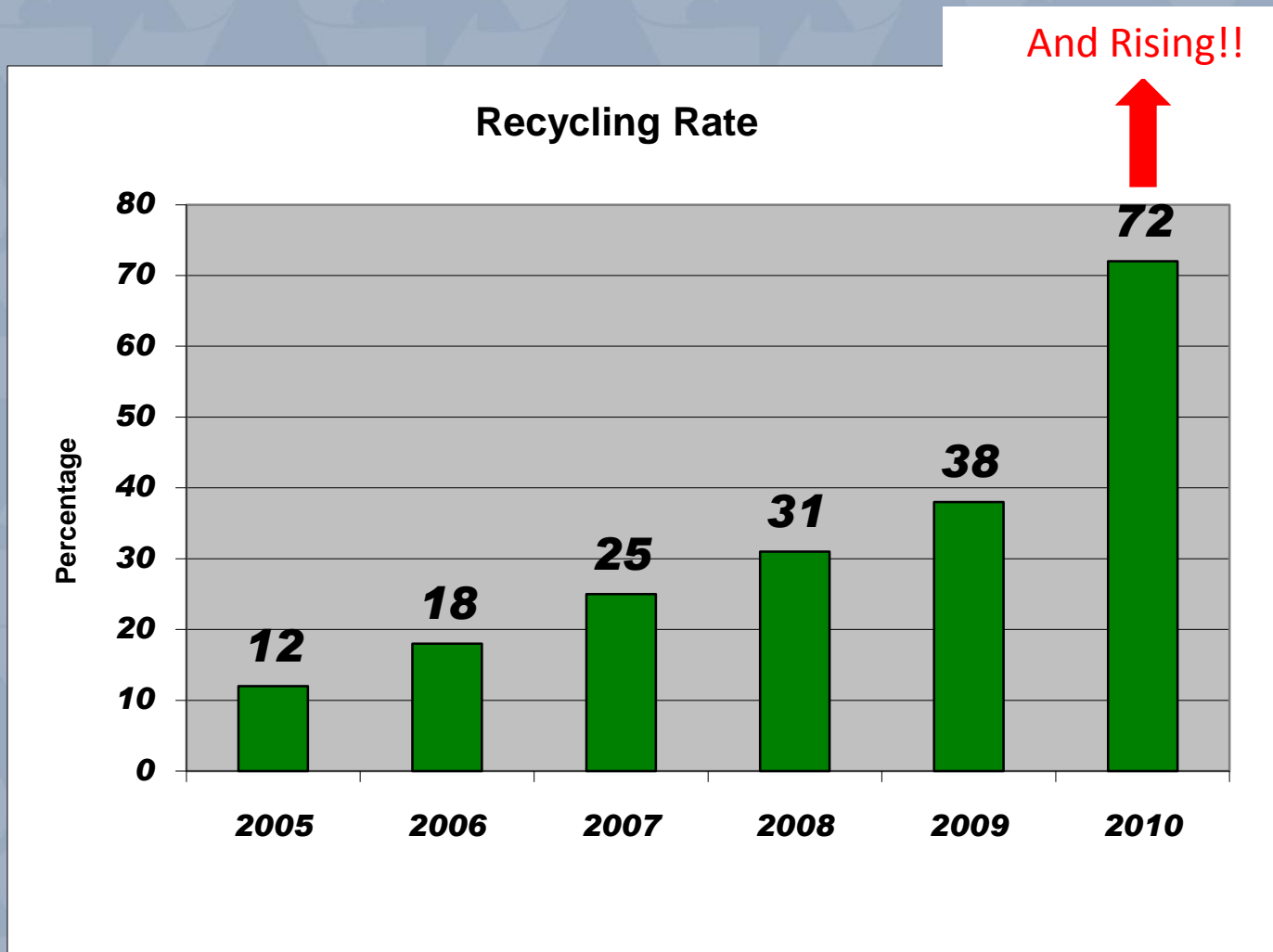
EPA Energy Star MLB Ballpark Data  
Weather Normalized Energy Intensity Use



# What are the results?



# What are the Results?



2010 Landfill Diversion Savings = \$65,000

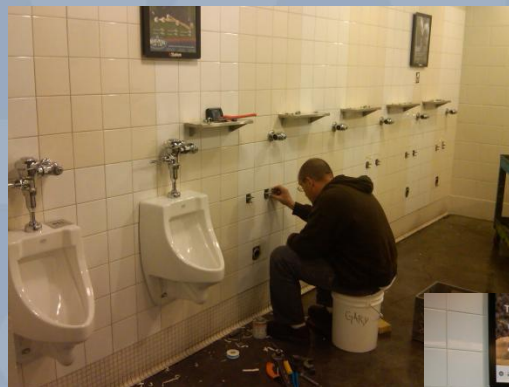


# Focus on Water Conservation

## Water Conservation Solutions

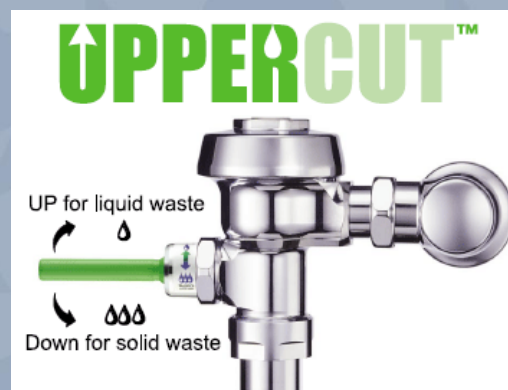
### 1) Install Low-flow urinals

- Reduced 128 oz / flush to 16 oz / flush
- Reduces utility costs \$24,000 / yr
- SPU rebate of \$53,000
- Saves over 1,000,000 gal / yr



### 2) Install dual flush valves on toilets

- Simple in-house solution
- Relatively low cost (\$40 / valve + labor)
- Installed in Women's restrooms
- Reduce water volume by 30%



# Focus on Water Conservation

## Additional Water Conservation Solutions

- Implement Operational Procedures
  - 1) Shut down procedures
  - 2) Education, Training and Reinforcement
- Additional metering to identify large consumers and manage accordingly
  - 1) Irrigation systems
  - 2) Make-up water on cooling towers
- Proper maintenance & repair

EXAMPLE: Can anyone tell me how much water we wasted when a drain valve on a fire hydrant was open for over a month? This was a small leak not visible by inspection, it took only 1 / 16 of a turn to close the valve.....

44,000 gallons = \$260.42



# Focus on Water Conservation

## Future Water Conservation Considerations

- Cooling tower non-chemical water treatment



- Main Dishwashing station upgrade

- 1) Circulates water for dish clearing
- 2) Only uses 2 gpm of clean make-up water
- 3) Recovers food scraps for composting



- Salmon-Safe Certification

- 1) Verifies practices that minimize the environmental impact to sensitive aquatic and upland resources
- 2) Helps site managers develop an integrated site management plan to mitigate the use of potential harmful chemicals and toxins that pollute our waterways



# What's Next?

## Additional Energy Conservations Measures under consideration

### - Utility Dashboard

- 1) Track utility use real time
- 2) Give visibility and awareness to building occupants



- Possible Photovoltaic (PV) power generating system
- Rain water harvesting system
- Continued lighting/HVAC retro-fits as technologies emerge
- Possible corporate sponsorship / brand value relationship



# Conclusion

<http://www.epa.gov/epawaste/index.htm>

[http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)

