

# Energy and Resource Conservation Competitions

## Recording and Reporting Conservation in Action



**VS.**



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# What is an Energy and Resource Conservation Competition?

- Residence Halls compete based on their
  - Ability to reduce electricity and water usage
  - Ratio of recyclables to landfill bound waste
  - Participation in events

Sustain-A-Bowl Winner's Party  
In the President's Box In Jordan-Hare:

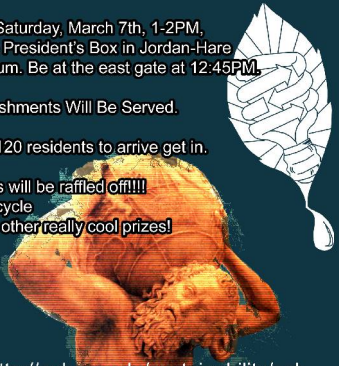
**CONGRATULATIONS  
TO SASNETT HALL!!!!**

This Saturday, March 7th, 1-2PM,  
in the President's Box in Jordan-Hare  
Stadium. Be at the east gate at 12:45PM.

Refreshments Will Be Served.

First 120 residents to arrive get in.

Prizes will be raffled off!!!!  
- A bicycle  
- And other really cool prizes!



<http://auburn.edu/sustainability/sab>

# Learning from other schools

- Find working best practices and adapt them to your campus to create a unique event
- Network with other schools to form regional and national competitions



# Where Does This Fit Into My Campus?

- Building onto events like RecycleMania
- Underscoring the importance of conservation and efficiency in campus wide planning



# Motivation

*“A comprehensive study that examined energy conservation in households concluded that residents who identified themselves as environmentally concerned, but who had not previously engaged in conservation practices, were the most likely group to reduce consumption in response to new feedback on energy use.”*

-- Journal of Environmental Psychology

Brandon, G. and Lewis, A. (1999), “Reducing household energy consumption: a qualitative and quantitative field study”



# Human Resources

Sustain-A-Bowl was planned by nine student interns in the Fall of 2008 and carried out over the month of February 2009 by six student interns.

- Facilities Department (Campus Energy Manager)
  - Questions and access to and electricity and water meters
  - Logs of energy and water usage from past years
- Recycling and Waste Management (Facilities Dept.)
  - Trash and Recycling pickup schedules
  - Dumpster Locations

# Competition Duration: 1 Month

- Since we are providing only weekly feedback the competition needs to provide residents enough time to observe the impact of their actions
- Resident population and weather seemed most predictable for February



# Basic Requirements

- Records of monthly usage from previous years
  - Take the average of the past 3~4 years, factoring out spikes and other anomalies
- Electricity and water meters at each building
  - If buildings share meters they are forced into a partnership
  - Access to these meters and the tools required to read them
- Recycling bins and dumpsters associated with specific halls or groups of halls

# Keeping Score

- Our competition awarded a score out of 1000 points
  - Electricity Reduction 300
  - Water Reduction 300
  - Waste and Recycling, 250
  - Events, 150
- Create a spreadsheet to track the points awarded to each hall
- Update residents weekly on their standing in the competition

# Measuring Usage: Water



- After compiling your multi-year average you are ready to take your “zero” reading
  - Log total gallons used at roughly the same time each week
  - (Current Gallons) – (Zero Reading)
- The percent difference between the competition recordings and the multi-year avg. is the reduction %

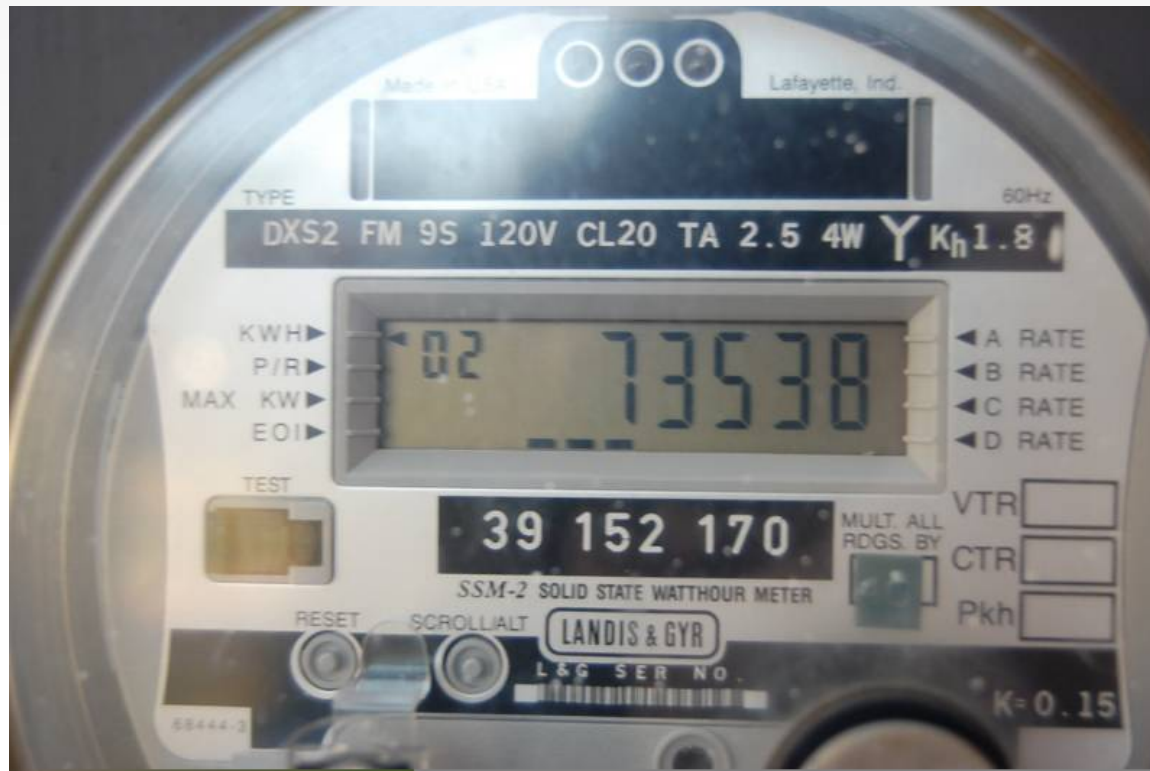
# Assigning Points: Water

- The hall with the highest percent reduction receives the full 300 points
- The points awarded to the other halls are determined by the following equation:

$$(\text{Example Hall Reduction } \%) / (\text{Highest Recorded Reduction } \%) * 300$$

# What about Electricity?

- Replace gallons with kilowatt hours (kWh) and apply the same techniques and formulas given in the water slides.



# Waste Reduction Component

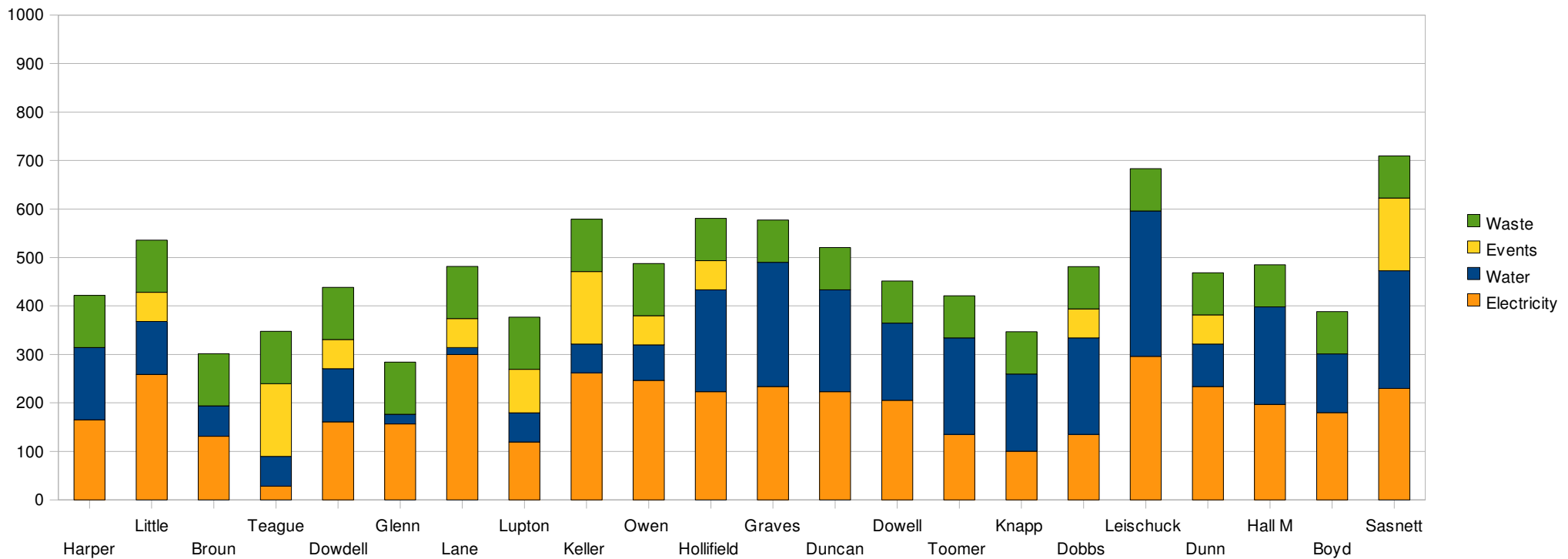
- Group halls around shared recycling bins and dumpsters
- Weekly trash and recycling readings averaged
  - A reading is logged as  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  or 1 based on the volume found in the bin
- Points are based on the ratio of recycle to trash
  - $(\text{average recycling reading}) / (\text{average trash reading}) \times 250$

# Other Ideas for Waste Component

- RecycleMania
  - 10 week competition
  - Centrally organized (in part by the US EPA)
    - Multiple competition categories
- Duke Garbology
  - Competition staff perform surprise searches through trash (in rooms, halls or dumpsters)
  - Recyclables found in the trash will result in point deductions.

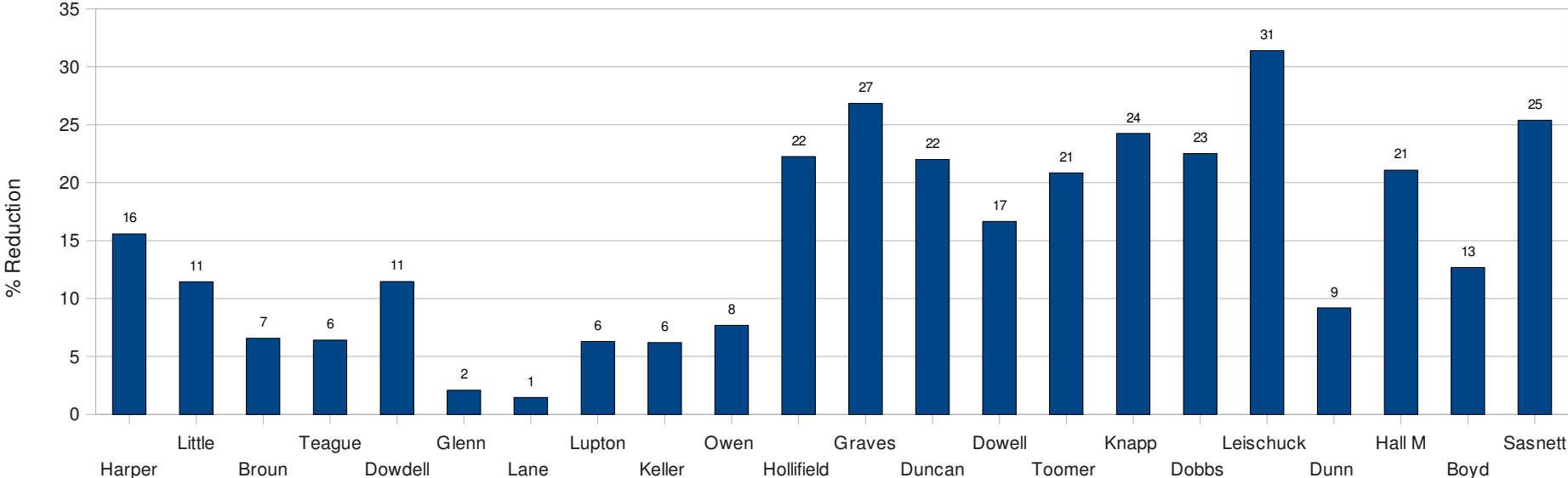
# Final Point Distribution for Sustain-A-Bowl 2009

Total points aquired by each residence hall by competition category (1000 points possible)



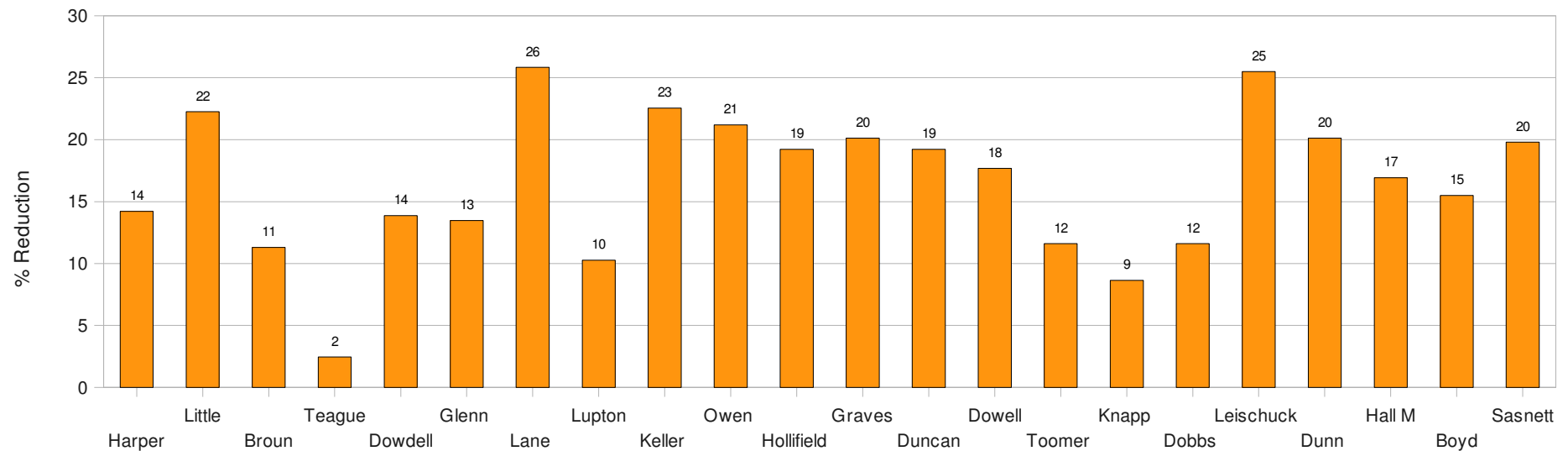
# Percent Reductions in Water Use (Feb. 2009 to 2006-2008 Average Feb.)

February 2009 Water Reduction Compared to Historical Average (2006-2008)



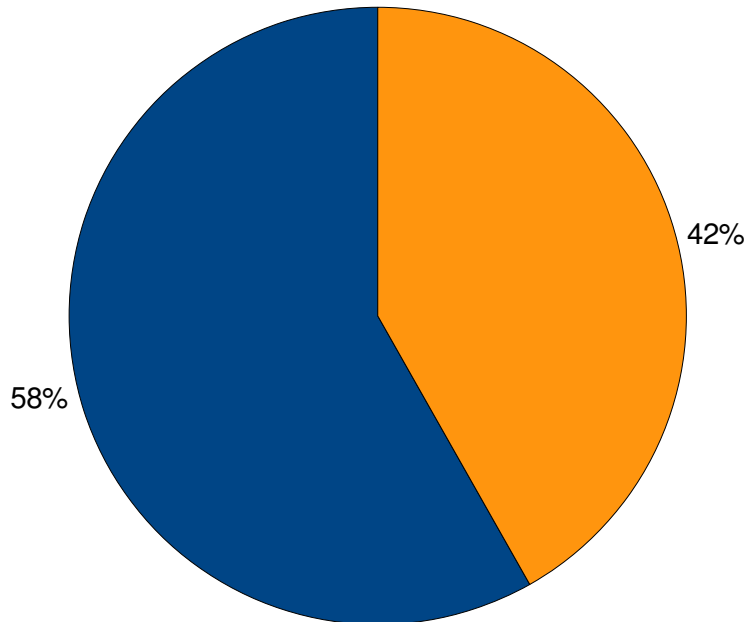
# Percent Reductions in Energy Use (Feb. 2009 to 2006-2008 Average Feb.)

February 2009 Electricity Reduction Compared to Historical Average (2006-2008)

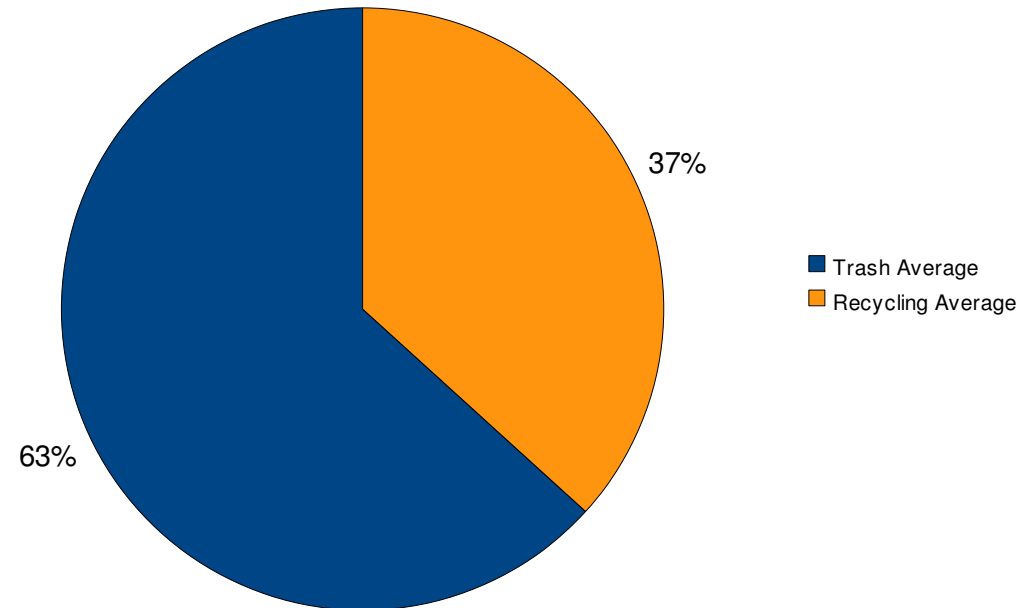


# Waste and Recycling as a percent of the solid “trash” stream (as average of weekly bin readings)

Waste & Recycling for Quad Residence Halls

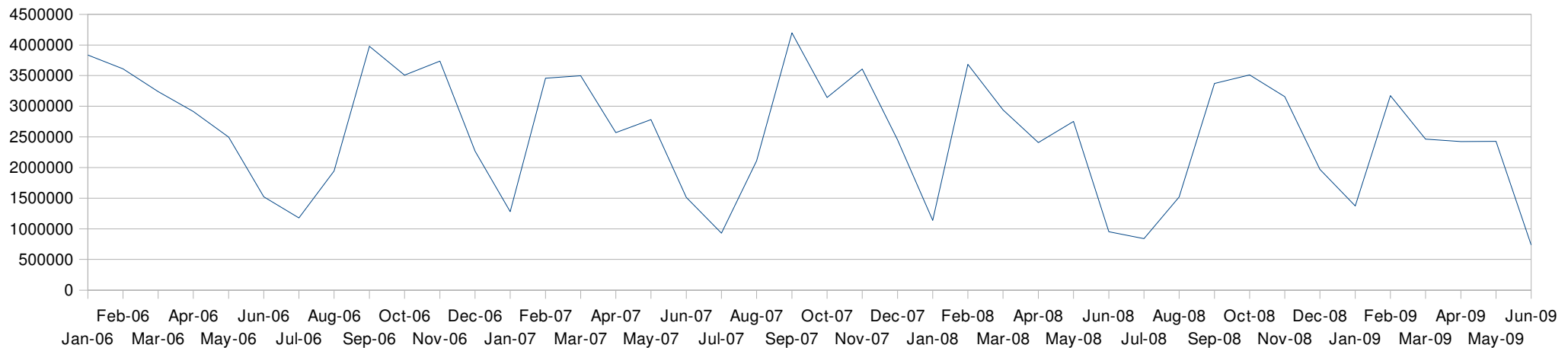


Waste & Recycling for Hill Residence Halls



# Looking at facilities data from 1/06 to 6/09 (Total Water Usage for all halls)

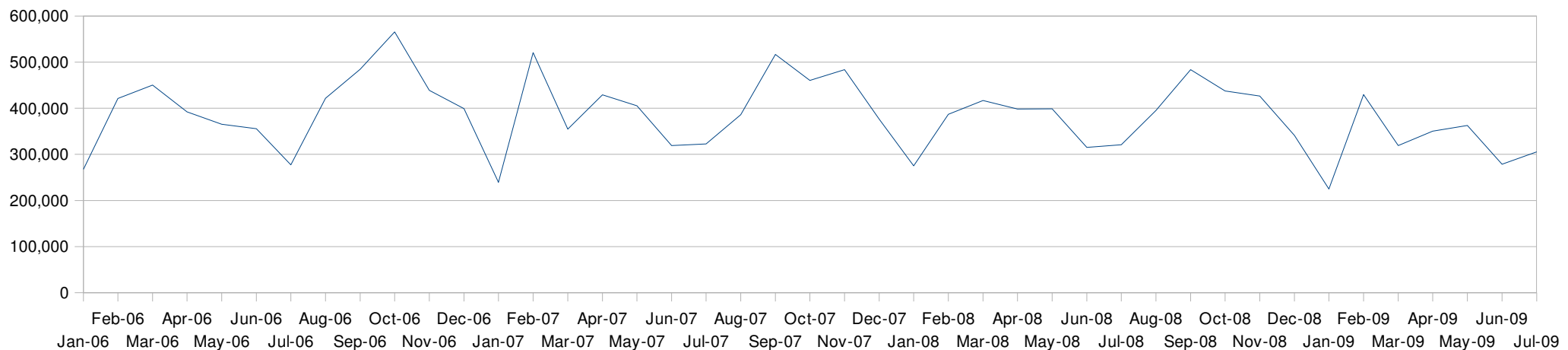
- Looking at the big picture for water usage



March, May and June 2009 logged the lower usages than the same months in 2006, 2007, and 2008

# Looking at facilities data from 1/06 to 7/09 (Total Electricity Usage for all halls)

- Looking at the big picture for electricity usage



March, April, May and June 2009 all logged lower usage than in the same months in 2006, 2007, and 2008

# Comparing our data to AU Facilities

- **Out of 22 Halls** the Sustain-A-Bowl staff logged across the board reductions in **water use**
- According to AU Facilities
  - **2009 to Average: 13 reductions**
  - 2009 to 2006: 12 reductions
  - 2009 to 2007 12 reductions
  - 2009 to 2008 13 reductions
- AU Facilities readings are taken mid-month and did not cover the entire competition

# Comparing our data to AU Facilities

- **Out of 19 Halls** (three pairs on shared meters) the Sustain-A-Bowl staff logged across the board reductions in **energy use**
- According to AU Facilities
  - **2009 to Average: 17 reductions**
  - 2009 to 2006: 10 reductions
  - 2009 to 2007 18 reductions
  - 2009 to 2008 2 reductions
- AU Facilities readings are taken mid-month and did not cover the entire competition

# Comparing Sustain-A-Bowl to competitions held at other schools

## Auburn University's Sustain-A-Bowl

- Water reductions ranged between 31% and 1.5%
- Elec. reductions ranged between 26% and 2.5%

Total calculated savings of **\$8291** for the month of February (\$2785 for water, \$5506 for electricity)

# Comparing Sustain-A-Bowl to competitions held at other schools

## Oberlin College

- Highest energy reduction 42.5% (8.7% average)
- \$1,388 in energy savings

## Sustain-A-Bowl

- *Water reductions between 31% and 1.5%*
- *Elec. reductions between 26% and 2.5%*
- *Total savings \$8291*

# Comparing Sustain-A-Bowl to competitions held at other schools

## University of Colorado at Boulder

- 5.8% average energy reduction
- \$567 in energy savings

## Sustain-A-Bowl

- *Water reductions between 31% and 1.5%*
- *Elec. reductions between 26% and 2.5%*
- *Total savings \$8291*

# Comparing Sustain-A-Bowl to competitions held at other schools

## Stanford University

- Energy use decreased by as much as 22% but increases of up to 9% were also documented
- The largest percent reduction for water usage was 35% with an maximum increase in usage of 38%

## Sustain-A-Bowl

- *Water reductions between 31% and 1.5%*
- *Elec. reductions between 26% and 2.5%*
- *Total savings \$8291*

# Goals for Sustain-A-Bowl 2010

- Compete with at least one other regional college or university
- Make the case for real-time feedback through a building dashboard system
- Interact with residents casually to find out which halls are actively competing and to document the specific personal choices made by residents

# Important Considerations Not Discussed in this Presentation

- Outreach and Public Relations
  - Press releases, educational presentations
  - Approach residents from all possible angles



- Events
  - Think low budget and low carbon
- Incentives
  - Get creative, Sustain-A-Bowl's grand prize was a lunch in our university president's stadium sky-box for the entire hall