

SAVE ENERGY. BE SAFE.

SHUT THE SASH

**If left open, your fume hood uses 3.5X the energy of a house!
Save energy by CLOSING THE SASH when not in use.**

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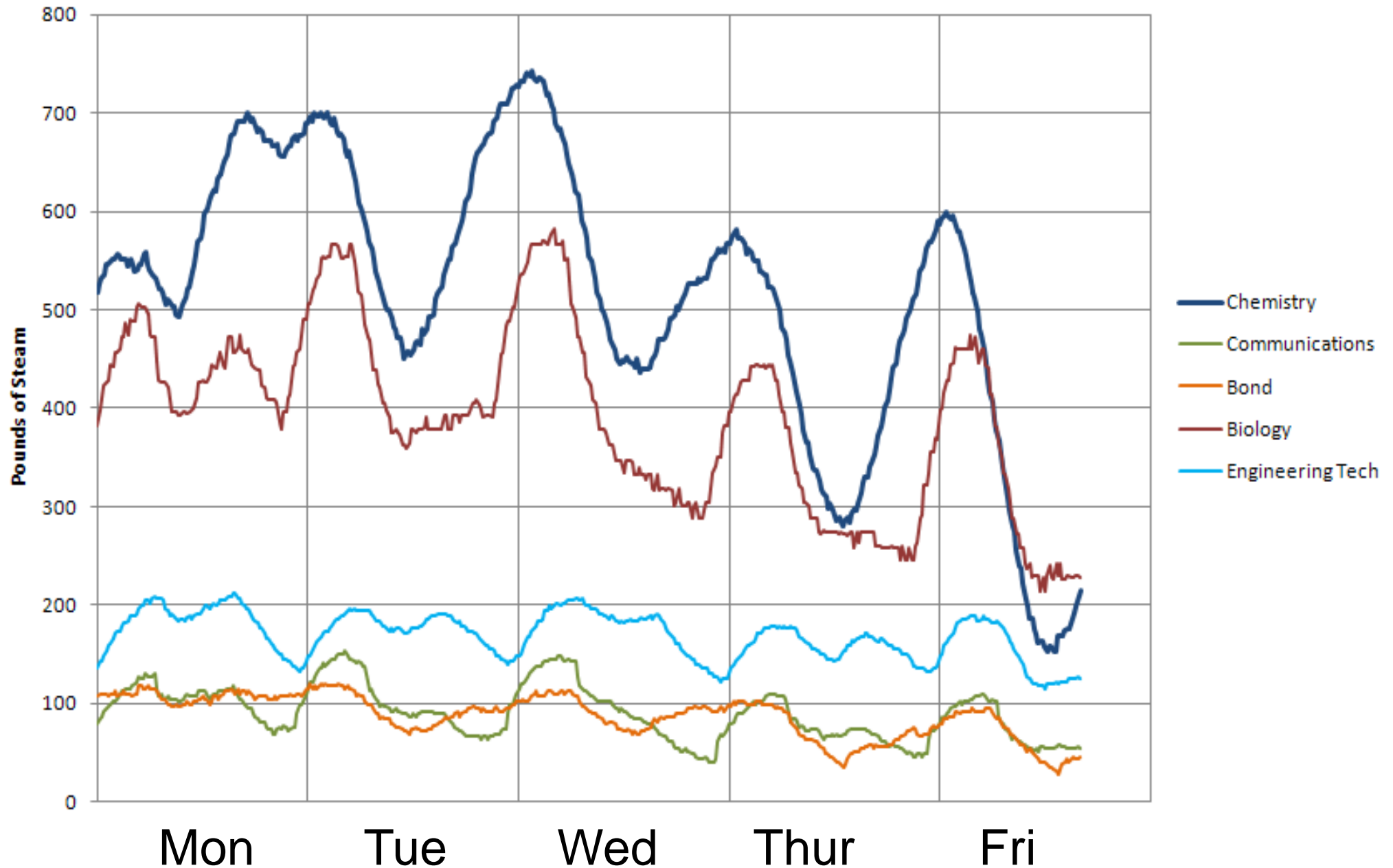
Campus Sustainability Planning Studio

Outline

1. Energy consumption in the chemistry building
2. Significance of energy conservation to Western
3. Possible solutions
4. Research and contacts
5. "Shut the Sash" experiment & analysis
6. Conclusion
7. Future works

1. Energy Consumption

Steam Usage per Building





2. Significance to WWU

- leader in sustainability
- encourage energy saving habits
- save money
 - budget cuts
 - reinvest



3. Possible Solutions: Harvard

Campaign:

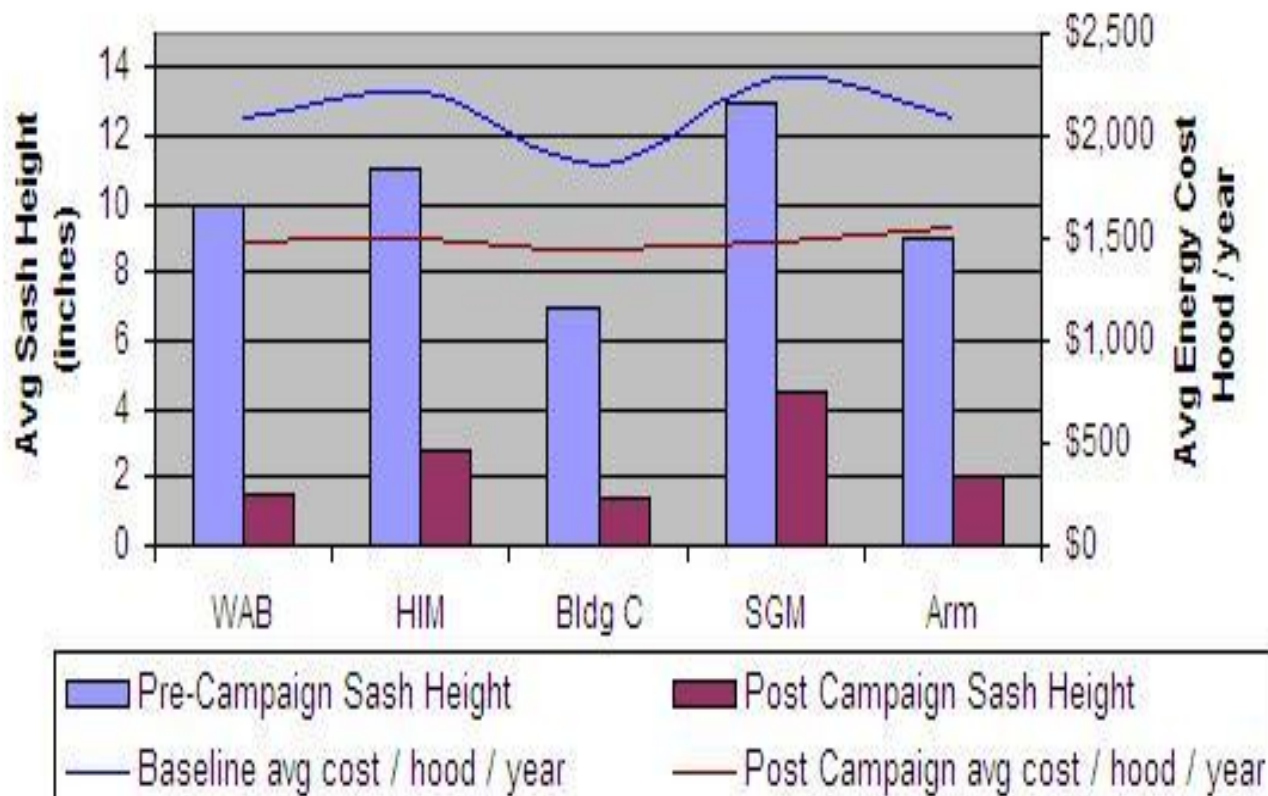
- Shut the Sash magnets
- Contests
- Flyers, e-mails, posters

Results:

- Sash height reduced from 12in to 2in.
- Saved over \$200,000 a year and 2.4 million lbs of greenhouse gas emissions
- Fume hood closure pre-contest: 30%
- Fume hood closure after contest: 89%

HMS Fume Hood "Shut the Sash" Campaign

Average Sash Height & Energy Cost per Hood



3. Possible Solutions

Berkeley

- New fume hood technology
- Reduced energy consumption by >50%
- Reduced air flow by 70%

MIT

- Saved \$30,000/yr
- Reduced energy by 4.6%
- Plans to expand across campus, potential savings of \$1 million/yr at MIT



4. Research and contacts

How do we track energy use on campus?

- Remote Utility Metering System
- Electricity & steam only

Concerns from chemistry department:

- Building construction will affect energy logs
- External energy demands that are tied to the building's electricity meter
- Some fume hoods are broken or don't have sashes

Solution: monitor airflow of each fume hood...

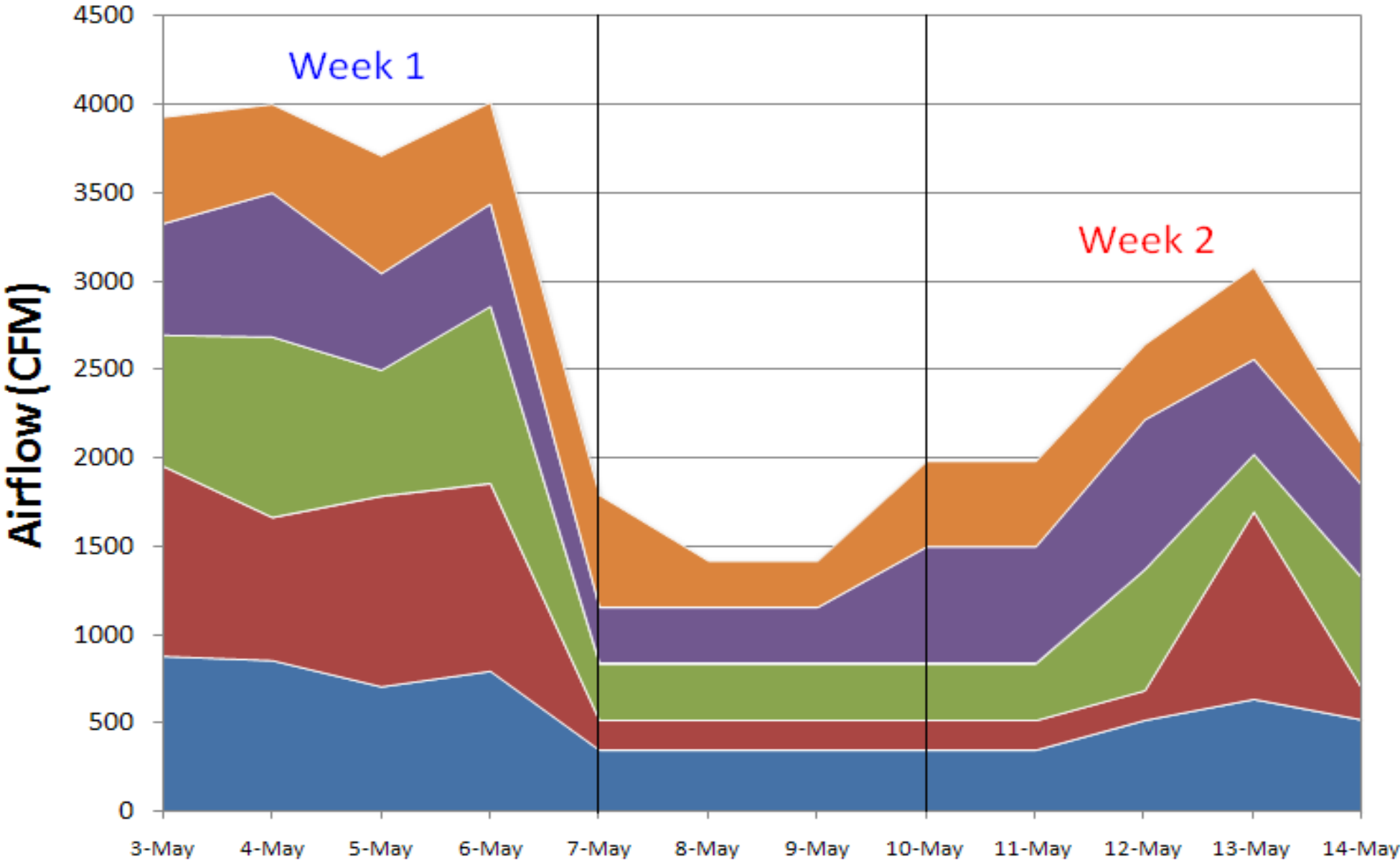
$$\begin{aligned} &\text{Total fume hood airflow} - \text{steam usage of building} \\ &= \\ &\text{energy used by fume hoods} \end{aligned}$$

5. "Shut the Sash" Experiment

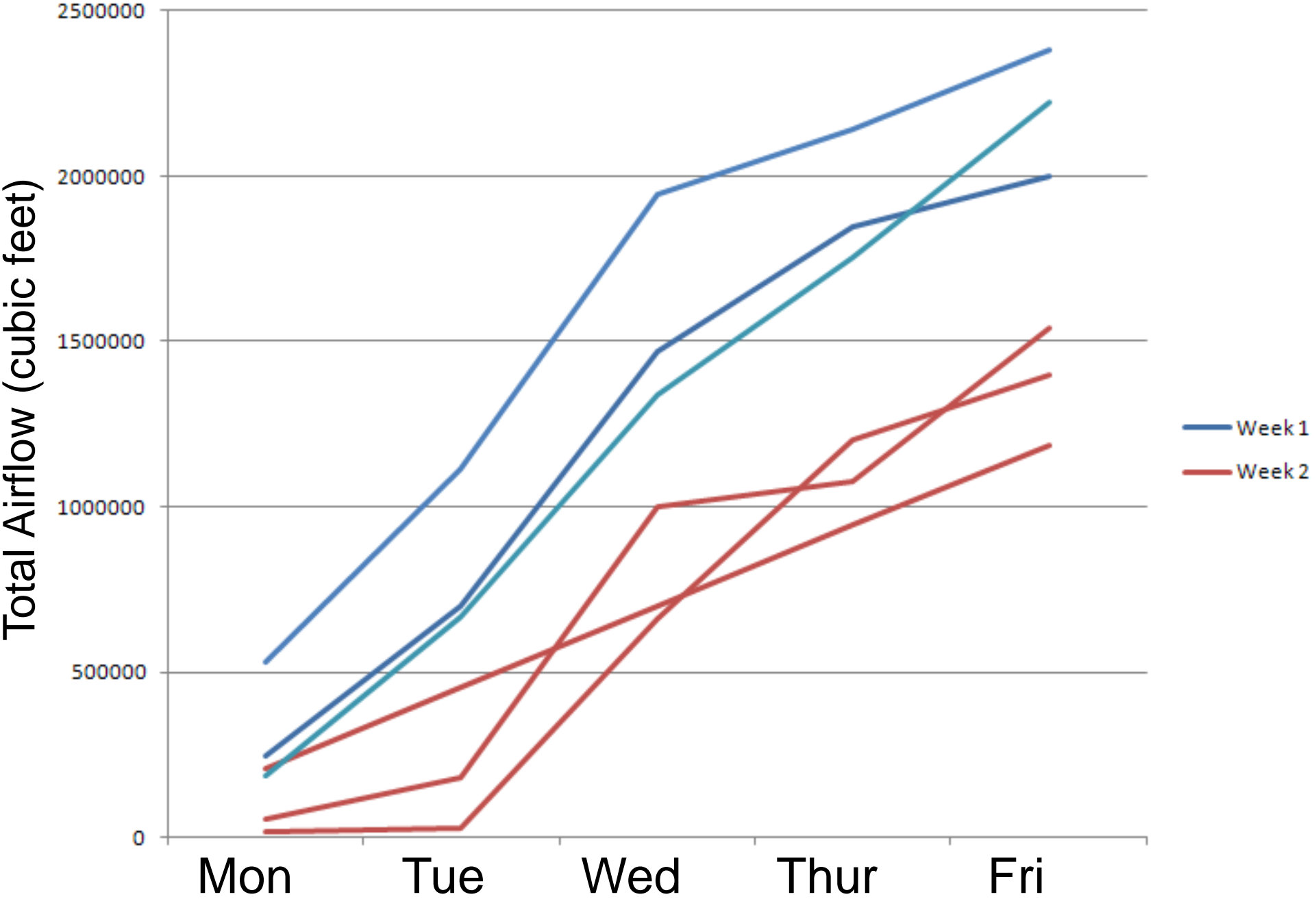
- Inspired by Harvard: 1 week effort to keep fume hoods shut
- Participation of the entire chemistry building
- Professors and lab instructors will remind students at the beginning of each class
- Did not include posters or flyers

6. Analysis

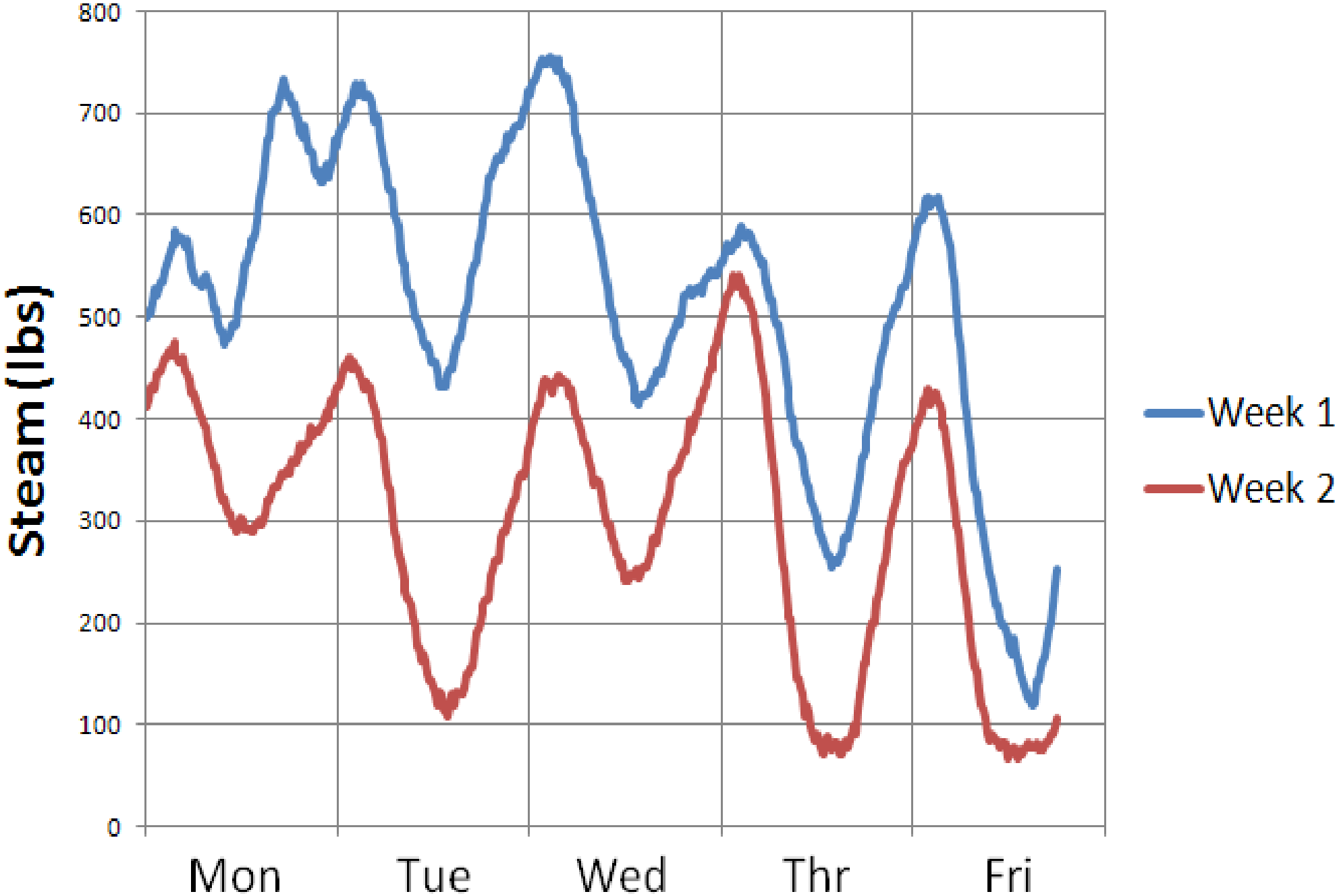
Average Airflow Before & After



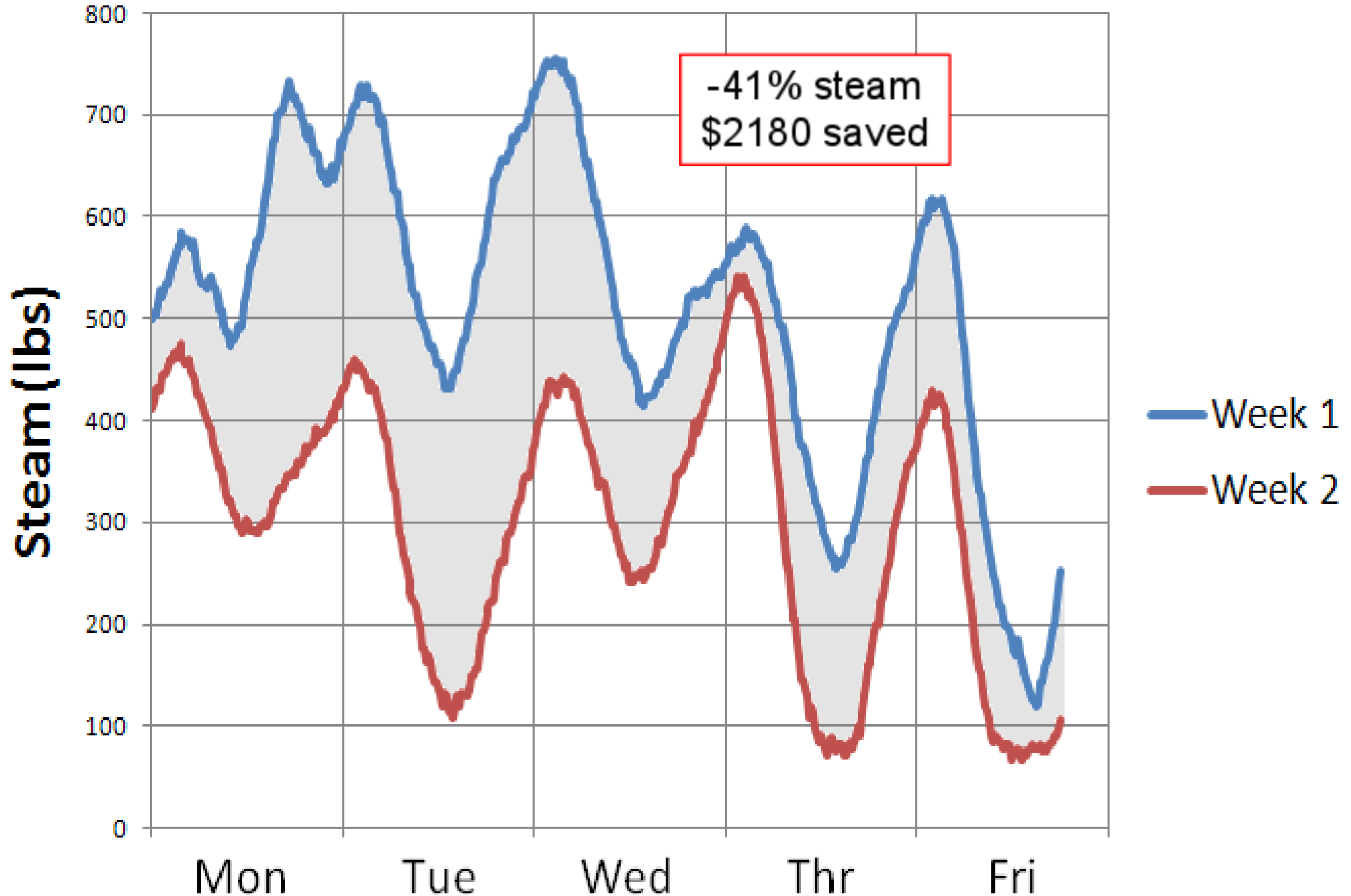
6. Analysis



Steam Usage in Chemistry Building



Steam Usage in Chemistry Building



7. Conclusions

1. Fume hood use reduced (Avg. CFM)
2. Chemistry building used less steam
 - \$2180 saved in just one week
3. In only one week, and only relying on professors to remind students, the project was successful in reducing fume hood use.



8. Lessons and future works

Recommendations

- Appoint someone to monitor fume hoods
- More kinds of data, more detailed
- More user-friendly data formats
- Design and maintain visual aids
- Repair broken fume hoods

