

# Shut the Sash Day Educational Campaign

## Findings and Results

November 12, 2014

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The Tulane Office of Sustainability launched a campaign in 2012 to promote the closure of fume hood sashes to improve the university's efforts in sustainability through energy efficiency. The goal of this campaign is to get lab users in the habit of remembering to close fume hood sashes when not in use. Previous campaign efforts served as a learning experience for our campaign this year, "Shut the Sash Day." We collaborated with Facilities Services, the Office of Environmental Health and Safety (OEHS), and various staff members involved in lab work in order to insure a successful campaign this year.

### **Review**

In preparation for the campaign in 2012, Ava Zimmerman and Liz Davey learned about Variable Air Volume (VAV) and Constant Air Volume (CAV) fume hoods at Tulane, with the former possessing potential for significant energy savings while the latter saw no real savings, but can still be important for safety reasons. They decided to focus on the Israel Building and did a pre-campaign assessment. They found that only 17% of fume hoods were closed when not in use. A sticker designed by an architecture student was developed and placed on a few fume hoods while faculty members of teaching and research labs were sent an e-mail about the safety and energy savings purpose of closing the sash. During this education campaign, there were concerns received from faculty about closing fume hood sashes completely as they believed this was detrimental to their safety in the lab. The post-campaign survey showed that 64% of fume hoods were closed.

### **Goals and Challenges**

This year the focus was to increase the scale of the campaign to all lab buildings on the Uptown and downtown campuses, even those without VAV hoods, to ensure all lab workers were encouraged to close the sash of their fume hoods when not in use. To mitigate fears of closing the sash completely, we decided to include in our campaign message that the sash should be closed to a 6-inch opening or less, as this is the point where we stop observing any significant energy savings from closing the fume hood further. We also met with OEHS and Facilities Services to ask for their support in the campaign and their approval to use their names on any material we use to promote the event.

We decided on a November 7<sup>th</sup>, 2014 deadline to try and achieve 100% closure of sashes on fume hoods not in use. The reason for establishing campaign day instead of having a continuous one was to have a deadline that would keep us on track. Another reason is because a continuous campaign can receive little support after some time as people become distracted and preoccupied with different events that arise. A short time frame makes the campaign more appealing as the idea is novel to those who hear the message and does not become something they begin to ignore. Having an annual “Shut the Sash Day” also ensures that an education campaign will be repeated each year. An entire “Game Plan” was developed to keep the campaign on schedule, detailing when sticker and flyers should be finished, when e-mails should be sent out, when meetings need to be held with certain groups on campus, etc.

### **New Sticker Design**

A new sticker was designed to have a clearer message than last year’s sticker that had ambiguity due to its Bigfoot reference. Using the calculations developed by Dr. Z Smith’s architecture class two years ago, we developed a new sticker that can be placed on the sides of fume hoods (they were measured for this at 2.4 inches in length), reminding lab workers to close the sash while understanding the energy savings behind this action. A sketch was made and then sent to Tulane Office of University Planning. Two stickers were made, one that including the [Green.tulane.edu](http://green.tulane.edu) url and one generic sticker without the website that can be used by any organization. The arrow design of the sticker is meant to mark where six inches is on the fume hoods so researchers can easily determine where the minimum height is to shut the sash.

OEHS recommended that the stickers be placed on fume hoods with supervision and not to be placed by faculty or lab workers themselves to ensure that the stickers are not placed on the glass of the sash itself.

### **Developing a Flyer**

In addition to the stickers, “Shut the Sash Day” flyers were posted in all science lab buildings including Israel, Flower Hall, Stern, and Boggs (all on the Uptown campus) and JBJ (downtown). These flyers relayed the message of energy efficiency and emphasized a safety message. The names of OEHS and Facilities Services were also placed on the flyer to ensure our audience that our campaign does not interfere with lab safety. A flyer has also been developed to promote sash closure and does not promote the November 7<sup>th</sup> campaign. These can be posted and kept up as a reminder for lab workers throughout the year.

### **Website**

A webpage, <http://green.tulane.edu/shutsash.html>, was developed on Green.tulane.edu for Tulane’s Shut the Sash Day campaign. The page summarizes the importance of fume hood sash

closure and provides resources for other universities or organizations to use for their own campaign, including our sticker and flyer, links to other universities and their campaign efforts, and a link to The U.S. Department of Energy's Better Buildings Alliance webpage.

### Reaching Out through E-mail, Meetings, and Tabling

A month before November 7<sup>th</sup>, an e-mail was sent out to the Deans of the School of Science and Engineering, School of Public Health and Tropical Medicine, and School of Medicine so that they may forward the e-mail to faculty and students involved in lab work on campus. On the Wednesday of the week of Shut the Sash Day, we also sent out a short reminder e-mail. We also attended a Departmental Safety Representative (DSR, their role is safety preparation for events such as fire or hurricanes, etc.) meeting in late October to present on the Shut the Sash campaign and reach out to faculty through the person serving as the department's liaison to the university's safety programs. Tabling at Flower Hall and Israel Building was also an effective way to reach out to students. We handed out quarter sheet of our Shut the Sash Day flyer and displayed a poster with information on the campaign and a picture of our new sticker design.

### Campaign Day Assessment

On November 7<sup>th</sup> around 1pm-2pm and 3pm-3:20pm, we visited labs in Flower Hall and Israel Building to check the status of VAV fume hoods. As directed by the Office of Environmental Health and Safety, we made sure to wear safety goggles and appropriate lab attire that includes closed-toe shoes and pants and followed the procedures that OEHS staff use for entering labs. (See below.) The Dean of the School of Public Health asked that no students be allowed to visit the labs of SPHTM researchers. The VAV Fume Hoods in the JBJ building were observed on November 11. In total, we observed 59 fume hoods that were not in use and 52 were found closed to at a minimum of 6 inches. *Thus, 88% of sashes on fume hoods not in use were closed.* This is an improvement from last year's 64%.

Here is a comparison of Campaign results in Spring 2014:

Location	% Closed
6 Research Hoods	64% or 19/30 observations
6 Teaching Hoods	66% or 23/35 observations

To Fall 2014 Shut the Sash Day:

Location:	% Closed
Israel Building	88% or 37/42 observations
Flower Hall	92% or 11/12 observations
BJJ	80% or 4/5 observations

<b>Total:</b>	<b>88% closed or 52/59 observations</b>
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## Conclusion

Our goal was to achieve 100% closure of all fume hood sashes not in use. Although we did not reach this, fume hood sash closure did increase significantly, demonstrating that our campaign was largely successful, proving that we were able to get our message across to many lab workers. In the future, the Office of Sustainability would like to collaborate with other universities like Loyola and other universities or colleges in New Orleans to increase our energy efficiency impact.

## Moving Forward and Advice for Other Universities

- Know your audience. When creating sticker designs and flyers, make sure cultural references can be understood by everyone like international students.
- Be ready to answer questions in regards to safety and fume hood ventilation.
- Building on the last point, it is a good idea to collaborate with your environmental health and safety offices or departments so that researchers are not hesitant about your message.
- Going into individual labs may be a good idea if faculty and researchers allow it. This way you can publicly announce your campaign directly to lab workers.
- Attaching stickers to fume hoods before the conclusion of your campaign may also help with achieving 100% sash closure. Try to ensure ample time to get the stickers up in all labs with VAV fume hoods so lab workers have a constant reminder and are more likely to close the sash.

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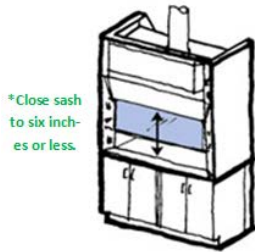
## Stickers:



**Flyers:**

**SHUT THE SASH DAY!**  
NOVEMBER 7, 2014

*Fume hoods are one of the most energy intensive devices on campus. The Tulane Office of Sustainability is promoting energy efficiency with sash closure.*



\*Close sash to six inches or less.

*On Friday, November 7th, we are looking to see 100% closure of sashes on fume hoods not in use ...*



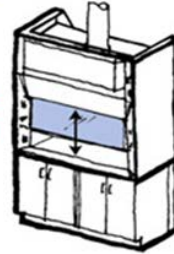
*Help us reach our goal by establishing the habit of closing fume hood sashes in all labs!*

**SAVE ENERGY. SAVE MONEY. BE SAFE.**

Brought to you by the Office of Sustainability  
In consultation with the Office of Environmental Health and Safety and Facilities Services.  
Contact: Liz Davey, Director of the Office of Sustainability; ldavey@tulane.edu; (504) 865-5145

**REMEMBER TO SHUT THE SASH!**

*Fume hoods are one of the most energy intensive devices on campus. The Tulane Office of Sustainability is promoting energy efficiency with sash closure.*



\*Close sash to six inches or less.

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**E-mails:**

E-mail sent October 15<sup>th</sup>:

Dear Tulane Faculty and Staff,

Please help us promote **Shut the Sash Day** on Friday, November 7, 2014 at Tulane's Uptown and Downtown campus laboratory buildings.

Closing the sash to 6 inches or lower is a very simple step that saves energy and provides a safety shield to contain the spread of hazards into the rest of the lab. Fume hoods are one of the most energy intensive devices on campus. Closing the sash of a variable air volume fume hood to a minimum position when not in use saves approximately \$1,500 in costs and 10 tons of CO<sub>2</sub> per fume hood, per year!

**On the afternoon of Friday, November 7, 2014**, trained student volunteers will be visiting some labs to observe the status of fume hoods not in use. Your help is vital for reaching our goal of observing 100% of the sashes closed on fume hoods not in use. This project has been reviewed and endorsed by the Office of Environmental Health and Safety (OEHS) and Facilities Services.

Please share this “Shut the Sash” message with your team by distributing and/or posting the attached flyer. In response to lab feedback, we’ve created a special sticker for fume hoods (see image below). Please contact us if you would like us to apply the sticker to fume hoods in your lab.

Thank you,

Liz Davey

Tulane Office of Sustainability

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Draft E-mail sent out November 3<sup>rd</sup> (short reminder email):

Dear Tulane Faculty and Staff,

Tulane’s Shut the Sash Day is November 7<sup>th</sup>! On Friday afternoon, several trained student volunteers with the Office of Sustainability will be visiting labs to observe the status of fume hood sashes. Please help us achieve 100% sash closure of fume hoods not in use. Closing the sash on fume hoods protects lab workers and results in significant energy savings!

Liz Davey

Tulane Office of Sustainability

**DSR Meeting PowerPoint Slides:**

## Shut the Sash Campaign

- Closing fume hood sashes to a maximum of a 6 inch opening when not in use saves energy and is important for the safety of all lab workers.
- With hundreds of fume hoods on campus, there is a potential for large energy savings.
- We plan on promoting the Shut the Sash message in the coming weeks through email, flyers, and stickers.
- We need your help achieving 100% closure of all sashes not in use by Friday, November 7<sup>th</sup>!

## Please help spread the word!

- Please help us promote this campaign by sharing this message with your labs
- Contact Liz Davey (ldavey@tulane.edu) if you would like stickers applied in your lab.



Sticker

### Shut the Sash Day Procedure for Visiting Labs:

- 1) Wear safety glasses and closed-toe shoes, no shorts or flip flops.
- 2) Do not enter any area marked Authorized Personnel Only.
- 3) When you approach a lab, knock on the door, introduce yourself: "I am NAME, a student intern with the office of sustainability." Explain what you are doing: "I am observing fume hoods to see if the sash is open or closed. Would it be okay if I stepped inside to look at your fume hood(s) for a brief moment?"

- 4) If they say no, do not enter the lab.

## **Shut the Sash 2014 Game Plan**

Tulane Sash Management Educational Campaign

Campaign Date: Friday, November 7<sup>th</sup>

### September:

1) Meet with operations staff of key departments for their insights.

- Questions:
  - What concerns/questions do you or faculty you know have about shutting the sash of fume hoods?
  - What approaches can we take to make everyone less hesitant?
    - Informational meeting or flyer? Approval by director of Environmental Health and Safety? *Flyer and stickers are best approach. Yes.*
    - What other actions can we take in order to ensure a successful campaign? *Contact DSR and other departmental operations managers.*
    - What can we do to ensure continued practice of shutting sashes after the campaign? *Stickers should be sufficient.*
    - How should we go about placing stickers on fume hoods? *Have someone in DSR with us.*
    - What people should we contact for this campaign—who do you think will be interested, who should/needs to know about it. *DSR, Department Operations Managers, department heads.*

2) 10<sup>th</sup>: Start working on draft flyer and webpage. X

3) 15<sup>th</sup>: Finish Sticker design and send them to be made into digital graphic. X

4) 24<sup>th</sup>: Finish draft of webpage. X

5) 29<sup>th</sup>: Finish draft of flyer. X

### October

1. 1<sup>st</sup> and 6<sup>th</sup>: Make draft of email for laboratory faculty about Shut the Sash. X



- a. Contact DSR about campaign, their approval and placing stickers on fume hoods. Maybe schedule a meeting? Contact FS and OEHS on the 1st for meeting following week.
2. 8<sup>th</sup>: Meeting around this day with Facility Services and Office of Environmental Health and Safety to sign off on event.
  - o Schedule meeting with Pam Fatland and Susan Welch from Environmental Health and Safety.
  - o Also schedule meeting with Ricky Kramer from Facility Services.
  - o Have draft email ready for them to review and ask who would be willing to co-sign the event.
3. 8<sup>th</sup> or 9<sup>th</sup>: Record status of fume hoods for comparison before and after campaign.
  - a. Need to find volunteers for this event, especially for the downtown campus. Who to contact about having access to laboratories with fume hoods?
4. 15<sup>th</sup>: Send emails to chairs of departments saying that we will have volunteers making a brief visit to labs on November 7th.
- 5) 22<sup>nd</sup>: Receive approval to hang flyers in labs before the week of October 20<sup>th</sup>.
- 6) 24<sup>th</sup>: Pass out flyers to faculty in laboratories 2 weeks before event/ meeting to promote campaign.

### November

- 1) 3<sup>rd</sup>: Send reminder email about Shut the Sash Day.
- 2) 7<sup>th</sup> in the P.M.: Record fume hood statuses.

**Findings from Tulane Architecture Class Used for statistics on Our Sticker:**

<b>Calculating the Energy, Cost &amp; Climate Impact of an Open Sash</b>	
A lot of energy is used cooling and heating the air drawn out by a fume hood with an open sash.	
Here are the numbers used to calculate the impacts for a fume hood left open year-round in New Orleans	
	<b>Quantity</b>
Air flow to provide 100 ft/min face velocity through a 5' wide fume hood with sash open 1.5 feet	750 cubic ft/min
Annual energy used to heat each cubic foot/minute to room temperature	36,260 Btu/cfm
Annual energy use to heat air drawn out with sash open 1.5 ft	27,195 kBtu
kBtus heat generated by 1 CCF natural gas (w/ efficiency of heating system factored in)	70 kBtus
Annual CCFs natural gas consumed to heat air for one hood	388 CCF
Annual cost for this natural gas at a price of \$1/CCF	\$388
Lbs CO2 emitted per CCF natural gas	12 lbs
Tons CO2 emitted by burning gas to heat air for one hood	2.3 tons
Annual energy use needed to cool each cfm to room temperature	169,200 Btu/cfm
Annual energy use to cool air drawn out with sash left open 1.5 ft year round	126,900 kBtu
kBtus cooling created by each kilowatt hour electricity used at Tulane's central chiller plant	10 kBtu
Kilowatt hours electricity consumed to cool air for one fume hood left open 1.5ft year round	12,690 kWh
Annual cost for this electricity at a price of \$0.10/kWh	\$1,269
lbs CO2 emitted by utility per kWh delivered, regional average	1.3 lbs
Tons CO2 emitted to cool air for one 5' wide fume hood left open 1.5' year round	8.2 tons
<b>Totals for heating+cooling</b>	
Annual cost to provide the heated /cooled air exhausted by a 5' wide fume hood left open 1.5'	\$1,657
Annual CO2 emissions associated with providing this heated / cooled air	10.6 tons
<b>Comparisons</b>	
Annual greenhouse gas emissions per passenger vehicle per Year	5.1 metric tons CO2E
Total CO2 emissions for energy use per single-family home	11.6 metric tons CO2
<small>Single-family home emissions calculated by EPA by adding up national average energy use per single family home for electricity, natural gas, liquid petroleum gas, fuel oil and kerosene. Vehicle emissions calculated for 2007 by the EPA using weighted average combined fuel economy of cars and light trucks of 20.4 miles per gallon and an average vehicle miles traveled of 11,720 miles per year.</small>	
<small>For EPA estimates, visit <a href="http://www.epa.gov/cleanenergy/energy-resources/refs.html">http://www.epa.gov/cleanenergy/energy-resources/refs.html</a></small>	

