

## **Sustainability Project Fund Application**

**For the Shut Your Sash project**

### **Applicant/Project Leader**

Name: **Selin Neseliler**

Email: [selin.neseliler@mail.mcgill.ca](mailto:selin.neseliler@mail.mcgill.ca)

### **Budget Requested**

Request for \$ 7,390

### **Project Group**

<i>Name</i>	<i>Email</i>
<b>Selin Neseliler</b>	<a href="mailto:selin.neseliler@mail.mcgill.ca">selin.neseliler@mail.mcgill.ca</a>
<b>Lauren Van Der Kraak</b>	<a href="mailto:lauren.vanderkraak@mail.mcgill.ca">lauren.vanderkraak@mail.mcgill.ca</a>
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## 1. Project Overview

Fume hoods are enclosed workstations that are used in laboratory research to ensure the safety of the laboratory personnel. Hoods protect users from breathing hazardous chemicals by capturing and exhausting dangerous gases produced by chemical reactions. This exhaust is managed by ensuring a constant air flow through a moving window (sash) in front of the hood and exhausting the air outside of the building.

The energy consumption of the hood is positively correlated with how much air it exhausts per minute. Air exhaust rates in variable air flow (VAV) hoods are dependent on the height of the sash relative to the bottom (or fully closed position) of the hood. Because the speed of the air passing into the hood is kept constant, lowering the sash decreases the total volume of air exhausted while still maintaining a safe work environment. McGill University safety standard recommends 100 feet per minute (fpm) air flow with a 14 inch sash opening. On average this safety standard removes 600 cubic feet of air per minute (CFM) when the hood is in use.

The energy demand for the hood is intensive. The energy consumption is high because the exhausted air needs to be replaced by new air. New air taken from the outside needs to be heated and/or cooled to the set room temperature to replace the exhausted air. One CFM of air exchange on average costs \$6 per year. To operate a standard hood with 600 CFM it costs \$3600 if the sash is left at the optimal height at all times. McGill University hosts more than 850 research laboratories and more than 800 chemical fume hoods. Closing the sash of the hood while not in use can save energy and subsequently money. For example, if the hoods are closed for 12 hrs per night, it will dramatically reduce the energy consumption and could save up to \$1800 per hood/per year. McGill has taken initiative to exchange most of the old hoods (constant air flow- rate of airflow does not alter with respect to sash height) with new VAV hoods. However there are no education programs to show researchers how to operate these hoods optimally. Given the difference in the intake airflow of these two types of hoods we feel that it is essential to educate researchers on how to optimally use VAV hoods. Therefore, we are proposing to start an educational campaign (like it has been done at Harvard, MIT, UC Berkeley, UCLA and University of Toronto) to remind lab staff to close the sashes of the fume hoods when not in use to conserve energy. Following the project design from the above Universities, we are proposing to implement our own “Shut your Sash” campaign to educate lab personnel at the Life Sciences Complex on campus about using VAV hoods. This building has been chosen for the pilot experiment given that it is fully equipped with only VAV hoods.

## 2. Objectives

The Project has one main objective: to promote energy conservation by implementing sustainable lab practices. Within this context, the main focus of the Project is the “Shut your Sash” campaign because of the substantial energy conservation that can be achieved by shutting the sash of VAV fume hoods.

The campaign will promote energy-conservation by shutting the fume-hood sashes during periods of inactivity. This campaign will consist of three phases: 1) communication; 2) distribution of educational material; and 3) monitoring of sash height, including an inter-lab competition.

*1- Communication:* This will involve communicating to lab managers about optimal operation and energy conservation concerning VAV hoods. We have spoken with Carmen Lampron, the director of the Life Sciences Complex (see letter of support), who has expressed both her support for the project and offered her assistance in providing the labs with the information necessary. This communication stage will consist of email communication concerning the overall goals of the project and face-to-face communication with lab personnel to address any specific questions that they may have. Before this communication time, *only* the principle investigators of the laboratories will be made aware of the monitoring of sash height to get the permission to enter their laboratory space. This precaution will be taken to get true values of sash heights before the campaign.

*2-Distribution of Educational Material:* Following our initial period of communication we will begin the second phase of the project; the distribution of educational material. At this time we will provide the labs with stickers to remind them to close the hoods when not in use and will also take this time to clearly mark the optimal height of the sash on each hood. Posters will also be distributed to each lab to inform them on the difference they can make in conserving energy by shutting the sash of the hoods while not in use. In addition, we will provide lab personnel with a checklist (for the door) to remind them to turn off the lights, the computers and the power strips before leaving for the day in addition to shutting the fume hoods sash. We feel that such a simple check will also provide additional energy saving means with respect to overall electrical usage.

*3-The Competition:* For such campaign to be effective it is imperative that we measure both the short term and long term effects of having educated research personnel on VAV hood usage. We will initially measure the height of the sash in the communication stage to obtain a before measurement of sash heights. This will serve as the baseline for our data analysis. We will measure the immediate effect of the campaign by measuring the sash height over a period of one month following the distribution of the educational material. One month after the end of this measurement period we will re-measure sash heights to determine the long-term effects. The campaign will be publicized as a “Shut your Sash” competition with the lab with the lowest post communication sash heights being awarded a free lunch.

Overall, we aim to promote conservation of energy through a troubleshooting exercise, which will be examined and tweaked to be used as the basis of a larger program to reduce energy use in laboratories across McGill. This will hopefully bring people together using an interest in sustainable lab practices as a basis.

### **3. Project eligibility**

The “Shut your Sash” campaign will contribute to a culture of sustainability at McGill by:

- 1- Leaving permanent markings to promote optimal fume hood usage.
- 2- Leaving permanent markings to remind lab personnel to close the hoods when not in use.
- 3- Educating lab personal to save energy by easy practices provided within a checklist.
- 4- Promoting behavioral change for lowering energy consumption and measuring the effectiveness of the campaign through the competition.

In addition, this pilot campaign will serve as a learning platform for implementing a “Shut your Sash” campaign in other institutes at McGill.

### **4. Timeframe/Milestones:**

The shut your sash campaign entails prior research to determine & mark optimal sash heights and to design catchy posters & stickers to promote the campaign. In addition, this pilot project necessitates direct interaction with personal from 55 labs and measuring sash heights before, after and 1 month after the campaign.

**Start Date:** May1st, 2011

**End Date:** August 20, 2011

Milestones	Target Dates
Preparation of Educational Material (Posters, Stickers and Checklists)	Mid-May
Measurement of Sash heights before the campaign (two weekdays, one weekend)	Mid-June
Communication to 55 Laboratories	Mid-June
Shut your sash competition	End of June
Competition Data Analysis	Mid July
Measurement of Sashes after 1 month	End of July
Data Analysis	Mid August

We plan to gauge the effectiveness of our campaign by measuring the sash height for each hood in the 55 laboratories in the Life Sciences Complex. Before the campaign starts we will measure the average height for each hood in each laboratory (two weekdays late after work hours and one weekend day). After we complete the educational campaign, we will measure the sash height for two weeks every other day after hours. The long-term behavioral changes will be assessed by a follow-up quantification of the sash heights for each lab one month after the competition is over. We are planning to submit a report to the Sustainability Office with statistics, calculations of how much energy has been saved and recommendations for implementing the campaign in other institutes. In addition, we will communicate this campaign by posting the results of the competition on the websites of Life Sciences Building and the Sustainability Office.

## 5. Stakeholders:

### *McGill University & the Academic Laboratories within it*

Everyone at McGill has a vested interest in the Project's success. Having a successful campaign displays McGill's commitment to sustainability while saving energy and money to be used in other projects within the community. Life Sciences Complex hosts laboratories from several different departments (eg. Biochemistry, Physiology, Neuroscience) and is a great platform to demonstrate the engagement of the campus research community to sustainable laboratory practices and energy conservation. Cameron Lampron the director of the Life Sciences Complex supports this project and recognize the long term benefits of the Project. Please see attached support letter.

### *McGill Facilities Operations and Development*

McGill Facilities Operations and Development are well aware of the energy burden of fume hoods on the heating, ventilation and air conditioning (HVAC) system. Successful implementation of this pilot campaign will decrease the overload on HVAC systems and the energy consumption. Jerome Conraud of McGill Facilities Operations and Development is the energy manager at McGill and is working on retrofitting laboratories at the University for energy conservation purposes. (Pls see the letter of support)

### *McGill Office of Sustainability*

Dennis Fortune, the Director of the Sustainability Office at McGill His mandate includes energy conservation at McGill. (letter of support)

Chris Wrobel, coordinator of last year's campaign to get Post Graduate Student Society of McGill (PGSS) members to fund the Sustainability Projects Fund. He is promoting the Sustainability Projects Fund among PGSS members and is developing several projects for the Fund. He is an advisor to this project.

## 6. Project Implementation

<i>Type of Activity</i>	<i>Estimated Time</i>	<i>Group Member in Charge</i>
<b>Research about optimal sash heights and catchy important information to be used in communication media</b>	20 hrs	Selin & Sarah & Lauren
<b>Design of the stickers and posters and checklists</b>		McGill Graphic Design Office
<b>Communication to individual labs, including marking hoods and talking to lab personnel</b>	30 hrs	Selin & Lauren
<b>Competition: Measurements of Hoods before, right after and 1 month after the campaign</b>	84 hrs	Selin & Lauren
<b>Reporting and analysis of results; future recs</b>	25 hrs	Selin & Lauren

## 7. Financials

We estimated the expenses of this campaign based on number of hours the staff members will be putting in, the cost for designs, the cost of printing and the cost of providing lunch to a lab of 20 people.

<b>Expense Description</b>	<b>Estimated Cost</b>
Staff Wages	4,050
Design of educational material	1,900
Printing Costs	1,040
Lunch for the winner lab	400
<b>TOTAL</b>	<b>7,390</b>

## 8. Related Experience of Project Participants

### Selin Neseliler:

Selin has held the position of Environmental Officer for the Graduate Students Association for Neuroscience (GSAN) since fall 2010. She is currently doing her PhD in the Integrated Program in Neuroscience and has been working in different laboratories since the fall of 2004. She has experience in organizing campus wide events; served as the public relations manager for Brandeis Media Coalition and co-founded a science magazine while completing her undergraduate degrees in Neuroscience and Biology at Brandeis University, MA (<http://people.brandeis.edu/~scope/>). Her thesis lab is located in the Bellini Building, which is part of the Life Sciences Complex.

### Lauren Van Der Kraak

Lauren is currently completing her PhD on the genetics of colon cancer in the Department of Biochemistry/Goodman Cancer Research Centre (GCRC) under the supervision of Drs. Nicole Beauchemin and Philippe Gros. Her two supervisors have labs in the Cancer Centre and the Bellini Building, which together encompass the Life Sciences Complex. She is familiar with the lab set up and most lab managers/lab personell of the Life Sciences Complex having worked in the facility for the last three years. She has been involved in research since 2003 and has worked at several institutions including the University of Guelph (Guelph, ON), the Hospital for Sick Children (Toronto, ON) and the National Microbiology Laboratory (Public Health Agency of Canada, Winnipeg, MB). She has also been a member of the Biochemistry Graduate Student Society and Post Graduate Student Society Council since 2009.

### Sarah Reiling

Sarah holds the position of MCGSS Environmental Advisor since fall 2010. Currently she is doing her PhD at the Institute of Parasitology, working with malaria parasites. She has lab experience since 2005 and has been working in different laboratories and institutes such as the Arctic Research Center at the University of Alaska at Fairbanks, the Federal Research Institute of Animal Health in Tübingen, Germany, the Faculty of Veterinary Science at the Chulalongkorn University in Bangkok, Thailand, and the Programme Onchocercoses Research Station in Ngaoundere, Cameroun.

## **Appendix A- Similar Projects at other Institutions**

### *Harvard University*

Laboratories at the Harvard Medical School (HMS) decreased their average sash opening from 12 inches to 2 inches as a result of their “Shut your Sash” campaign. The campaign has saved HMS more than \$100,000 in energy costs and reduced the greenhouse gas emissions to nearly the equivalent of the removal of 120 cars from the road.

<http://green.harvard.edu/hms/shut-the-sash>

### *University of Toronto*

The pilot campaign run at the Department of Chemistry showed that only 11% of the sashes were kept shut before the campaign started. After the campaign, this number has increased to 76% and was kept at 60% six months after the campaign. These results suggest savings of \$20,000-100,000 annually in the Chemistry Building.

<http://app.sustainability.utoronto.ca/fumehoods>

### *UCLA (University of California Los Angeles)*

UCLA’s shut your Sash campaign included 230 hoods and had an average reduction of 5.4 inches which translates to over 1,400,000 lbs of CO<sub>2</sub> emissions and \$149,730 of savings.

<http://map.ais.ucla.edu/portal/site/UCLA/menuitem.789d0eb6c76e7ef0d66b02ddf848344a/?vgnextoid=e20e0d58d7bff110VgnVCM100000e1d76180RCRD>

UCSD (University of California San Diego), UC Berkeley, MIT and DUKE have run similar projects, however the results of their campaigns are not available online.

## Appendix B- Detailed Expenses



# McGill

# Estimate

Graphic Design  
Communications Services  
McGill University  
845 Sherbrooke Street West  
James Building Annex, First Floor  
Montreal QC H3A 2T5

Tel: 514-398-4455

**TO:** Selin Nesililer

**Date:** 1 March, 2011

**Department:** Sustainability Office

**Phone:** 514-632-2169

**From:** Carmen Jensen

**Phone:** 514-398-2275

**PROJECTS:** Design of a number of elements for "Shut Your Sash" awareness program

	<b>PRICE</b>
<b>ITEM A:</b> Design of "Shut Your Sash" poster	\$ 1000-1100
<b>ITEM B:</b> Design of small sticker, re-enforcing message of poster	\$100-180
<b>ITEM C:</b> Design of large "Checklist" sticker (Based on a "typographic" solution)	\$230-320
	<small>(Illustrations NOT included)</small>
<b>ITEM D:</b> Design of long "Ruler" sticker	\$250-360
<b>Printing prices have been sent for. They will be forwarded to you as soon they are received here.</b>	

**IMPORTANT:**

This estimate includes 2 sets of black and white laser proofs and final art. Colour proofs are charged per item. Extensive text must be supplied electronically. Client is responsible for translating and verifying all text. This price is valid for a period of 60 days and includes tax (unless specified). **Job is put in production only when FOAPAL or Banner ID number is received. Press approval and all authors alterations are charged extra at \$47.00 per hour. These include extensive changes or modifications to design and/or text. Late submission of material and/or return of corrections may effect final delivery date.**



# McGill

# Quotation

Graphic Design  
 Communications Services  
 McGill University  
 845 Sherbrooke Street West  
 James Building Annex, First Floor  
 Montreal QC H3A 2T5

Tel: 514-398-4455

**TO:** Selin Nesililer **Date:** 17 March, 2011

**Department:** Sustainability Office **Phone:** 514-632-2169

**From:** Carmen Jensen **Phone:** 514-398-2275

**PROJECTS:** Costs of printing elements for "Shut Your Sash" awareness program

	<b>PRICE</b>
<b>ITEM A:</b> Printing of "Shut Your Sash" poster – 11 x 17", printed full-colour, one side	
Quantity of 50	\$100
Quantity of 200	\$155
<b>ITEM B:</b> Printing of small sticker, approximately 4 x 4"	
<b>ITEM C:</b> Printing of large "Checklist" sticker	
<b>ITEM D:</b> Printing of long "Ruler" sticker	
<b>STICKER PACKAGE PRICES:</b>	
Quantity of 50 of each item on white paper, 2 colours of ink	\$189
Quantity of 200 of each item on white paper, 2 colours of ink	\$242
Quantity of 50 of each item on yellow paper, black ink only	\$215
Quantity of 200 of each item on yellow paper, black ink only	\$397
	(Taxes NOT included)

## Appendix B- Detailed Expenses

Salaries	Salary Description	# of Positions	\$/hr	Hrs	Estimated Cost (\$)
	Research for Educational Material and Posters	3	12	20	720
	Communication to 55 Labs	2	12	30	720
	Measurement of sash heights (52 hoods)				
	Before the campaign (2X weekday; 1 weekend)	2	12	20	480
	After the campaign (5X weekday; 2 weekend)	2	12	44	1056
	1 month after the campaign (2X weekday; 1 weekend)	2	12	20	480
	Data Analysis and Report	2	12	25	600
	Total Amount for Salaries				4056
Competition	Description	Amount (#)	\$/per		Estimated Cost (\$)
	Lunch -based on 20 people				400
	Design for Posters				1900
	Printing Costs*				
	Posters	200			155
	Round Stickers	200			242
	Ruler Stickers	200			397
	Checklist Stickers	200			242
	Total Amount for Campaign				3335
	Total Amount Requested				7391

\*Printing Costs are based on 200 prints since it is economically more feasible to print more (pls see the quotation provided above). The rest of the prints from this campaign can be used in future campaigns.

## Appendix C. Support Letters



**McGill**

**Life Sciences Complex Project  
Projet du Complexe des sciences de la vie**

March 14, 2011

Re: Letter of Support to the McGill Sustainability Projects

McGill Office of Sustainability  
1010 Sherbrooke Street West, Suite 1200  
Montreal, Quebec,  
H3A 2Z7

Sir/Madam:

This is to confirm that I fully support the project proposed by Ms. Selin Neseliler, Lauren Van Der Kraak and Sarah Reiling, aiming at sensitizing the occupants of the Life Sciences Building on the energy consumption issues when not using the variable air flow hoods properly. Our building was built with many energy saving automated features but some, like the fume hoods, encompass also a human factor. After discussing the project with Lauren and perceiving their determinations to achieve this project, I am convinced that their initiative will have a noticeable positive impact on the energy consumption in our building.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'Carmen Lampron', with a long horizontal flourish extending to the right.

Carmen Lampron, Ph.D.  
Director - Life Sciences Complex Project  
McGill University, Department of Biochemistry