

## Better Buildings Alliance - Laboratories Project Team

# Fume Hood Sash Management Implementation Guide

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*This document is adapted from a guide developed for the Alliance to Save Energy Green Campus Program.*

## 1 Introduction

This document describes how to implement a fume hood sash management campaign. It is primarily intended as a step-by-step guide for the lead organizer of the campaign. It is also informative for the key stakeholders, including Environmental Health & Safety (EH&S), facilities management, and laboratory staff (lab managers, Principal Investigators, research staff, etc.).

## 2 Getting Started

Contact EH&S and/or Facilities Management and begin working with them to obtain background information about the fume hoods at your campus. This is very important so that you can target labs that will lead to energy savings because they contain VAV fume hoods, and also so that you can get valuable background information about the number, type, and location of the hoods in the buildings.

### 2.1 Get buy-in from EH&S and facilities management staff

Identify EH&S and facilities management staff that have decision-making authority or otherwise influence the operation of fume hoods. Schedule a meeting with them to:

- Obtain their support for the sash management campaign. Review results from prior and on-going sash management efforts, if any, and identify lessons learned.
- Obtain information about fume hood quantities, types, locations, and if they have automatic sash monitoring i.e. sensors or switches to detect when a hood has been left open. Automatic sash monitoring makes your ability to determine whether the hoods are open or closed much easier because you may not need to conduct in-person walk throughs for all your monitoring.
- Identify labs to target for your campaign and provide referral to lab leadership (if possible). Your selections should be based on the following criteria:
  - Fume hood type – variable air volume (VAV).
  - Fume hood density – labs with more fume hoods per unit area have a bigger potential for energy savings. For example, if the minimum required air change rate is 6 changes per hour, a fume hood density greater to or equal to 1 hood / 1000 sq ft of net lab area would typically indicate a lab in which the ventilation rate is largely driven by fume hoods. Note: This is an approximate guideline.
  - Lab user buy-in – labs with sustainability champions and/or lab staff that are able and willing to work with you and accompany you on your walk-throughs.

### 2.2 Contact potential labs

Determine the scope of the campaign i.e. number of labs and buildings. Review the section on running the campaign to determine the level of effort. If you are running a competition, you also

may want to consider at this time what the possible delineation of competitors could be: by building, floor, lab group, department, etc. Once you determine your short list of potential labs and are ready to invite them to participate in the campaign and/or competition, do the following:

- Garner lab staff support for the campaign or competition, such as from the lab manager, lead researcher, or PI. This may vary from lab to lab depending on their organizational structure.
- Schedule walk-throughs of the lab for the baseline period, the competition period (optional), and the post-competition period. See below for more information about what these walk-throughs will entail.

### **2.3 Make the final decision about campaign or competition or both**

A campaign is simply an educational outreach to achieve overall savings. A competition, on the other hand, pits pre-determined lab spaces against one another and a winner is recognized/rewarded based on who saved the most energy compared to their own baseline. See below for information about how individual lab baselines are determined. Note that if actual energy savings figures are not available or too cumbersome to obtain, you can award a winner based on fume hood closure rates and estimated energy savings.

### **2.4 Confirm staff availability and resources**

Confirm staff availability for running the campaign (see below for the tasks that this entails). On high education campuses, this is an excellent opportunity to engage students, especially via student groups focused on energy and sustainability topics.

Only a few simple resources are required to run the campaign.

- Data tracker sheet to track sash position. This is either on paper or via a laptop/tablet. (See the Resource Kit for a sample)
- Camera – digital camera or on your smart phone; make sure you have developed a means to ensure that the photos you take of each hood are saved with the proper name.
- Standardized prop to place in each fume hood picture – this could be a ruler or yardstick.

Note: If the fume hoods are equipped with sash positioning sensors and occupancy data, you do not need to collect the data manually. However, ensure that the data are available and accurate, before deciding to forgo manual data collection.

## **3 Running the Campaign**

### **3.1 Baseline measurements**

- Pick a week to take measurements before you launch your campaign, when you and the lab staff member who will accompany you can make morning (pre-work to monitor how sashes have been left from the night prior) and mid-day (lunch-time) visits to the lab space(s) each day of the week to achieve an accurate baseline. It is important that you don't advise the lab users beyond your initial lab contacts about the campaign so that these baseline measurements are untainted. Make sure to pick a typical work week, not one that may have unusual occupancy, e.g. holiday weekend, etc.
- Walk through the lab space(s) and for each fume hood mark on your data tracker whether the fume hood is a) open, b) partially open, or c) closed. Also take a picture of each hood, with your standardized prop.
- If a hood is in use i.e. has a person actively using it, mark it as "in use". Don't bother the lab user.

- As noted earlier, if the fume hoods are equipped with sash positioning sensors and occupancy data, you do not need to collect the data manually. Just download it from the building control system.

### **3.2 Educational campaign**

Now that you have your baseline, it's time to make a big splash with your campaign. Be creative! Below are some suggestions, but we encourage you to design your campaign how you see fit, with your organization in mind.

- Design stickers for fume hoods to advise users to close them when not in use.
- Design flyers for lab bulletin boards or other spaces to dispel myths about fume hood use and advise about the energy savings potential.
- Plan and host outreach events, including tabling or a reception.

The Resource Kit includes sample sash stickers and sash management campaign posters.

### **3.3 Mid-Campaign measurements (optional)**

You may consider taking mid-campaign measurements to track progress. For example, this may be in the second or third week of a 4-week campaign. Use the same measurement approach as described for the baseline. Feel free to advise lab users of the campaign at this time because it has launched.

### **3.4 Post-campaign measurements**

Pick a week to take measurements within a few weeks of the conclusion of the campaign. Use the same measurement approach as described for the baseline.

### **3.5 Calculate Sash management Improvement and Energy Savings**

Use the Sash Management Savings Guide to determine the change in sash management and the associated energy savings.

### **3.6 Recognition**

If you ran an energy savings competition between labs/floors/etc., some prizes may include: food parties, raffle of a desirable incentive item for labs users in the winning lab, etc. Publicize the results via posters, email and social media.

Recognize the stakeholders that helped you with this project. You could send them a thank you note, recognize them in your newsletter, or give them a small token.

## **4 Campaign Follow Up**

After your campaign is complete, consider follow up with your lab participants to take measurements in approximately 3 - 6 months to determine the persistence of the lessons learned during the campaign. Throughout your campaign, think about how you can help a lab institutionalize fume hood safety and energy savings. For example, consider the following:

- Install permanent stickers on all hoods
- Incorporate sash management practices into lab user training
- Regular tracking of sash management, with feedback to lab users and managers

*For more information, contact the Laboratories Project Team:*

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