

FACT SHEET

Fume Hoods Provide Key to Laboratory Energy Savings

Improved safety, lower energy costs, and greener facilities

Why Do Fume Hoods Matter?

Fume hoods are a key component of clean, safe laboratories, helping to protect workers by clearing the air of harmful chemical fumes, vapors and gases, and by minimizing potential injury. A single fume hood consumes about \$9,100* in electricity each year, demonstrating that this vital piece of equipment represents not only a substantial expenditure for labs but also their greatest opportunity for dramatic, long-term savings.

Fume hoods are energy intensive, as they draw significant amounts of electricity to operate powerful fans that draw air away from employees and their work areas. That air is then filtered and eventually discharged as clean exhaust to the exterior of the building. The cost is further increased by the electricity and gas used for heating, ventilation and air-conditioning (HVAC) equipment, which must function at higher-than-average levels to maintain air temperatures when fume hood functioning is affecting airflow in the rest of the lab. Consequently, the average lab in Pacific Gas and Electric Company's (PG&E's) territory tends to be up to five times more energy intensive than a typical commercial space of a similar size.**

Implementing certain key energy efficiency measures and making some simple changes will help ensure that your facility meets stringent safety standards while still achieving significant energy savings year after year. Improvement in this area provides the added benefit of decreasing your laboratory's greenhouse gas emissions and carbon footprint.





Systems that Make a Difference

There are several equipment options available for fume hoods that can help reduce your facility's electricity and gas usage. These systems may be installed individually or in various combinations, and customers who install them may qualify for energy rebates from PG&E. Some of these options include:

- **Automatic Fume Hood Closure Systems:** These highly efficient systems use motion sensors to assess whether a work area is in use. When no activity has been detected for a set period of time, the hood's sash is automatically lowered. Employees can control the sash manually, if needed.
- **Variable Air Volume (VAV) Fume Hoods:** This type of hood is often combined with the automated-closure system noted above, and it allows the hood to continuously interface with your facility's HVAC system. As a sash is raised or lowered, the HVAC system is signaled that the volume of air to be exhausted must be increased or decreased, and it then adjusts fan speeds accordingly.
- **High-Performance Fume Hoods:** This refers to a variety of energy-efficient hoods that are designed to provide better containment within the fume hood while maintaining reduced exhaust volume.

Fume Hood Facts

- **Average cost to operate one fume hood:**
Over \$9,100/year*
- **Average cost to operate hood after energy efficiency retrofit:**
About \$5,600/year*
- **Number of fume hoods in PG&E's territory:**
Around 28,000**

The Human Element



In labs that use manually-operated fume hood sashes, training lab workers to actively manage closure of those sashes is simple and cost-free, and it can substantially reduce the amount of energy your lab consumes. This form of sash management program relies on educating employees about how vital it is to keep fume hood sashes lowered whenever possible to limit airflow, reduce the lab's energy use and increase their own level of safety.

A simple tool like a well-designed fume hood sash sticker can help some labs save up to \$3,000 per fume hood, per year, in energy costs when combined with a sash management training program.[†] These stickers are applied to the vertical jamb of each sash, and they function as visual guides for lab staff, helping them judge optimal sash levels throughout the workday. A facility that educates its employees and applies these stickers to five of their fume hood sashes could potentially save up to \$75,000 in energy costs over a five-year period.

HOW TO GET STARTED

For tips on which fume hood measures will help your lab save energy and money, or to learn about other ways your facility may become more energy efficient, contact your PG&E Account Representative or call our Business Customer Service Center at 1-800-468-4743. More information is available at www.pge.com/biotech.

*Calculation uses PG&E's 2012 commercial electricity and gas rates and is based on the average costs of fume hoods in laboratories located in Sacramento, California. This estimated operational cost is based on the LBNL calculator and assumes \$0.12 per kWh and \$159.30 per kW-year.

**Source: *Automatic Fume Hood Sash Closure*, Lawrence Berkeley National Laboratory (LBNL) and Cogent Energy, Inc.

†Source: *Fume Hood Stickers Increase Lab Safety and Efficiency*, University of California at Davis

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