Are You Using the Stop Light Sticker System?

These stickers can help your lab save energy by clearly communicating to all lab users when equipment can be turned off or left on.

Get your set of stickers by emailing ***myPower@berkeley.edu***

Now Recruiting Power Agents!

Power Agents are UC Berkeley volunteers committed to engaging the campus community in actions that reduce energy use in buildings.

Interested in becoming a Power Agent? Let us know by writing to ***myPower@berkeley.edu*** or visit ***myPower.berkeley.edu*** for more information.

Cold Storage

Standby Power

Computers

Purchasing

Lighting

Fume Hoods

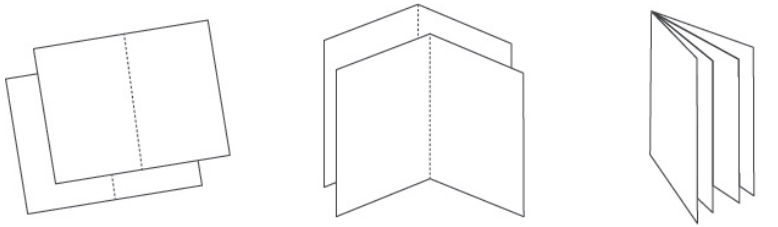
mypower at BERKELEY

SAVING ENERGY *In Your Lab*

Building Upon Environmental Excellence

Tips & Ideas for Energy Conservation

Turn Your PDF Into a Booklet:



1. Print Double Sided
2. Assemble Sheets in Order
3. Fold Into Booklet

SAVING ENERGY *In Your Lab*

Teaching and research laboratories at UC Berkeley are key to our core mission. Labs consume more energy, water, and additional resources than other campus buildings, in part due to energy intensive ventilation and equipment. In fact, labs are estimated to use over 40% of the total campus electricity demand. Of this, "plug-ins" (like freezers, autoclaves, incubators, etc.) can require as much as 50% of the building energy use. However, there are multiple strategies and best practices that reduce resource use while maintaining mission and research excellence. Visit labs21century.gov for even more ideas.

Cold Storage

☐ **Refrigerator & Freezer Best Practices**
Develop a cleaning and maintenance schedule as suggested by the vendor or at least once a year to maintain efficiency.

- **Minimize Frost Formation on Freezers**
- **Clean Refrigerator & Freezer Coils**
- **Check the Door Seals or Gaskets for Leaks**
  Do this by puttling a dollar bill in the door as you close it and see if holds firmly in place.
- **Keep a Cleared Radius of 3"**
  Reduce the heat load by keeping items off and away from appliances.
- **Locate Freezers in Cooler Areas**
  Freezers have to work hard to maintain cold temperatures if the surrounding air is hot.
- **Consider Using Chest Freezers**
  Chest freezers are more energy efficient than upright freezers.
- **Turn Off Any Empty Freezers**

Fume Hoods

Fume hoods demand a large amount of energy, so much that the energy use of one fume hood could power 3 households over a single year. While air changes in the labs are required for safety reasons, you can take helpful steps for energy savings.

☐ **Shut Fume Hood Sashes**
When not in use, decrease hood work opening. When working with chemicals, set the sash at the proper opening and never more than is recommended.

☐ **Store Chemicals and Equipment in Cabinets**
Keep fume hoods clear of unnecessary items that can block ventilation.

☐ **Report Excessively High Inflows**
If your fume hood has >150 ft/min inflow, turbulence and decreased containment can occur.

☐ **Turn Off BioSafety Cabinets**
Shut sashes and turn off blowers and lights at night.

We Can Work Together

☐ **Collaborate with Your Facility Manager**
Explore the possibilities of installing occupancy sensors to turn off fume hoods at night. Such occupancy-based measures might work best for teaching labs, but could decrease energy use overall. Also ask about decommissioning hoods, switching to more efficient variable air volume fume hoods, or changing the temperature operating range of the lab space.

Lighting

According to the U.S. Department of Energy, 22% of all U.S. energy use goes to lighting.[4] The wrong amount or kind of lighting in your workspace can cause eyestrain, glare, and headaches.

☐ Turn Off Lights When You Don't Need Them

Look to eliminate unnecessary lights and use natural lighting when possible.

☐ Use Task Lighting

If possible, turn off overhead lights and switch on a desk lamp. With low-wattage task lighting, less ambient light is needed, resulting in energy savings upwards of 40%.[5]

☐ Switch to CFL or LED Light Bulbs

CFLs last 6–12 times longer than incandescents and use about 75% less energy. Light-emitting diode (LED) bulbs last even longer than CFLs and use a fraction of the energy.[6] Both are available in equivalent light intensity and quality.

We Can Work Together

☐ Agree on Lighting Routines in Communal Spaces

Work with other building occupants on a routine for turning lights off when they are not needed. Post instructions for more complex switches. Install lighting timers or occupancy sensors in common areas whenever possible.

☐ Consider Alternate Storage Methods

Switching to new room temperature sample storage methods (e.g., biomatrica.com) or liquid nitrogen storage tanks for certain kinds of samples can reduce electricity use as well as increase storage dependability. Contact myPower@berkeley.edu for more information and case studies.

☐ Conduct an Equipment Audit

Identify items that can be decommissioned, not only cold storage, but other equipment as well. You can save electricity by not having excess equipment plugged in, and free up space in your lab. You can also request stickers (see back of booklet) to help signal which equipment can be regularly turned off.

Standby Power

Standby power, sometimes referred to as vampire energy or phantom power, is the energy used by some electronics that are turned off yet still plugged into an outlet. This energy use is significant: it accounts for more than 100 billion kilowatt hours of annual U.S. electricity consumption and more than $10 billion in annual energy costs.[1] Combat standby power in your lab!

☐ Use a Power Strip

Plug in items like chargers and lamps, make the strip easily accessible and turn it off when those items aren't being used.

☐ Check Out a Kill-a-Watt

If you want to know how much energy an electronic item is wasting when not in use, borrow a Kill-a-Watt monitor from the Office of Sustainability. Email myPower@berkeley.edu to reserve one today.

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4. apps1.eere.energy.gov/buildings/publications/pdfs/corporate/bt_stateindustry.pdf 5. National Research Council of Canada, "Task Lighting Effects on Preferred Office Lighting & Energy Savings," nrc-cnrc.gc.ca/eng/programs/irc/ie.html
6. energysavers.gov/tips/lighting.cfm

1. Standby Power and Energy Vampires: energystar.gov/index.cfm?c=about.vampires

Follow these simple steps to reduce how much energy your computer equipment uses.

☐ Turn Off:

- Your monitor when you leave for more than 15 minutes.
- Individual printers at night or on weekends.

☐ Avoid Screensavers

Originally used to prevent images from being burned into older monitors, they actually cause newer ones to use more energy by preventing them from going to sleep.

☐ Reduce Brightness and Bump Up Contrast

Dropping brightness to the lowest setting can reduce power usage by up to 50% – just make sure that you can still easily read the screen by boosting contrast![2]

☐ Disable Bluetooth and AirPort

Save battery power by turning off the wireless Bluetooth and AirPort when not in use and make sure to fully charge and fully discharge your laptop battery once a month.

Did you know?

Berkeley researchers estimate that the internet uses almost 2% of global energy consumption. This includes direct use on computers and smart phones along with the energy required to build and maintain infrastructure like servers, and routers.[3]

2. energyefficientcomputing.blogspot.com 3. "Internet accounts for almost 2 percent of the world's total energy consumption," Paras Shah, Daily Californian, October 30, 2011.

☐ Keep Vents on Your Computer Clean and Unblocked

This keeps the fans that cool your machine working more efficiently and can extend the life of your computer.

We Can Work Together

☐ Take Advantage of the Power of Your Network

Many printers and multi-functional devices (combining copying, printing, and scanning functions) are easy to network together so multiple people can use them.

☐ Ask IT Staff

See if backups and updates could be regularly done on the same day of the week, so that computers could be turned off the other days.

Purchasing

☐ Buy Energy Efficient Equipment

Look for Energy Star or EPEAT equipment when shopping BearBuy or see if the "Environmentally Preferred" list includes an option for the equipment you want to buy.

☐ Ask the Vendor

If you're buying a specialty item like a lab freezer and there's not an Energy Star alternative, ask the vendor for information on energy usage and how to adjust energy-saving settings. Also checkout the Labs21 energy saving equipment wiki at labs21century.gov.