

CU-Boulder's Guide to Saving Energy in your Office



University of Colorado
ENVIRONMENTAL
C E N T E R



GenerationGreen
Green thoughts. Green goals. Green people.



Introduction

The CU-Boulder campus is a thriving academic institution that is certain to grow in the coming years. We are faced with the challenge of meeting the energy needs of all faculty, staff and students while simultaneously reducing our impact on the environment. Throughout the 1990's, campus energy use rose by 5% a year, and in response, the Vice Chancellor of Administration has called on the university to strive towards an ambitious energy conservation goal. **We must first stabilize and then reduce average energy consumption per square foot.** This *Guide to Saving Energy In Your Office* provides basic information and cites resources that can help you take action to conserve energy.

Increased use of computers, fax machines, copiers, etc. contribute to the exponential increase in campus energy use. Everytime we leave unneeded computers or lights on, we waste electricity and money. Moreover, the fossil fuel power plants that generate most of our electricity emit pollutants such as mercury, sulfur, and carbon dioxide. These emissions can cause respiratory disease, smog, acid rain and global climate change.

Many of the tips included in this guide are simple steps that each of us can take to help reduce the overall environmental footprint of our university. Read through them and share the knowledge with others. By increasing our awareness of basic energy saving tips and by taking advantage of programs such as Energy Star, we can achieve the goal of being an environmentally-friendly university.



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*Generation Green is a partnership between Facilities Management and the UCSU Environmental Center aimed at reducing energy use on campus. For more information or to **get involved**, call (303) 492-8308.*



Did you know?:
In 2000 CU students voted to increase student fees by \$1 per semester in order to purchase 2 million kWh of wind power per year for the university. At the time, this was the largest university purchase of wind power in the nation. Students are now purchasing 100% wind energy for the 3 student run buildings.

Purchasing and using your equipment efficiently

COMPUTERS

Tips on efficient operation:

- Be sure to enable **power management features** on your computer. This allows the computer to go into “sleep mode” when not in use-with no sacrifice in computing performance.
- **Turn off your computer after hours.**

Did you know?

- Using a computer’s “sleep mode” can reduce its energy use by 70 percent!

What to buy:

- Buy an **Energy Star computer.**
- Energy Star computers power down to 15 Watts or less when inactive for a user specified time period.
- Consider purchasing a laptop. Laptops use only 15 to 25 Watts on average, whereas a computer and monitor could use up to 300 Watts.



MONITORS

Tips on efficient operation:

- You can save \$10-15 per year per monitor if you set the default sleep time(**power saving feature**) to 10 min.
- Screen savers are **not** energy savers. Monitors use up to 70% of PC energy. Enable sleep mode and power saving features on your monitor.

What to buy:

- Buy an Energy Star monitor, which can power down to less than 30 Watts.
- Purchase a flat screen monitor. These use much less energy and save space too!
- Buy the smallest monitor necessary. Energy consumption increases with the size and resolution of the monitor.

PRINTERS

Tips on efficient operation:

- Use the “print preview” option to find errors before printing.
- Before printing in color, make a black and white copy to edit.
- Avoid unnecessary printing like electronic mail and world wide web documents.
- Use recycled paper!



What to buy:

- Buy Energy Star printers because they have a powersave mode for idle time.
- Consider buying an Ink Jet printer because they use less energy than laser printers and are of comparable quality.
- Consider networking a printer to share with co-workers.
- Buy printers with **double-sided printing** options.

Did you know?

It takes 15-20Wh to produce a piece of virgin paper

SCANNERS

What to buy:

- Look for Energy Star scanners which power down to 12 Watts or less.

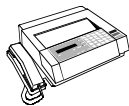
FACSIMILE MACHINES

Tips on efficient operation:

- Reuse one-sided office paper in the fax machine
- Use electronic mail or fax directly from your computer
- Use fax post-its to save a cover sheet

What to buy:

- Use Energy Star fax machines which have a low energy standby control.
- Ink jet fax machines use less energy than thermal paper machines and the paper is cheaper.



PHOTOCOPIERS

Tips on efficient operation:

- Turn off the copier on the week-ends and at night.
 - Enable the energy saver features.
 - Use the duplex option to cut paper supply costs and save paper.
 - Use recycled paper products.
- Energy Star copiers come with a list of recycled paper products that work best with that copier.

What to buy:

- Buy Energy Star copiers. They use a lower power mode in periods of inactivity.
- Find the appropriate-sized copier for your office. Energy consumption usually increases with the size of the copier.

How much energy is your office using?

1. List all electrical devices you use and then find out their electrical use.

2. To determine their electrical use:

$$\text{Power used (Watts)} =$$

$$\text{electrical current (Amps)} \times \text{voltage (V)}$$

- If you are plugged into a typical outlet, you can assume that the voltage (V) is 120V.
- To find electrical current (A), look at the documentation that came with your device and it may be on the back of the device.

3. Multiply those two together to come up with Watts per hour(W/hr). Multiply this by 24 to get the power used per day(W/day).

- With regard to lights, they normally have the Watts posted on them so take that number for how much power it uses per hour and multiply it by 24 for its usage for the day

4. The biggest electrical load use is what you need to turn off first to do the most good.



SOME SPECIFIC SUGGESTIONS

◇ Turn off your computer and/or peripherals when they are not in use. A modest amount of turning computer equipment on and off will not harm the equipment.

◇ Break the habit of turning on all your computer equipment as soon as you enter the office each day. Turn on each piece of equipment only when you intend to start using it.

◇ Avoid using the switch on a powerstrip to turn on all your equipment.

◇ Don't turn on your printer unless you are ready to print.

◇ Turn off your entire computer system when you go to lunch or will be out of the office for a meeting or errand. Rebooting when you resume computer work usually just takes a minute.

-State University of New York at Buffalo Guide to Green Computing

Disposal of Office Equipment

Property Services will properly dispose of, recycle, or resell your office equipment, including furniture, printers computers, etc. Visit their web site:

<http://stripe.colorado.edu/~propman/Home.html>

What is Energy Star?

When purchasing new equipment, always look for the Energy Star label. Energy Star labeled products meet or exceed energy efficiency criteria set by the Environmental Protection Agency and the Department of Energy. Energy Star equipment uses about half as much electricity as standard equipment. This program allows for user specified sleep settings according to the daily usage of the product. When the computer sleeps, it powers down and decreases your energy consumption. The Energy Star program:

- Reduces pollution
- Lowers your energy bills
- Minimizes the amount of heat generated from equipment
- Lengthens the lifespan of your equipment

Remember to look for the Energy Star label as the symbol of energy efficiency. For more information call 1-888-STAR-YES and look at their web page: <http://www.energystar.gov>



Bright Ideas for Lighting!

While the incandescent bulb graphic looks like a symbol of ideas and intelligence, it is actually an energy inefficient source of light. "80% of the energy consumed by the average incandescent lightbulb wafts away as heat." (A.K. Townsend)



Use the right lights!

- Purchase energy efficient bulbs, such as **compact fluorescent light bulbs (CFL)**. A CFL bulb uses up to 75% less electricity than an incandescent, lasts up to 10 times longer and generates less heat.
- **Consider occupancy sensors** to turn on lights when someone enters a room and turn them off when everyone leaves. You can also control lighting with timers and dimmers to minimize energy waste.
- **Purchase electronic ballasts** for your fluorescent lights. These ballasts are 10 to 15 percent more efficient than magnetic ballasts.

Take advantage of natural light!

- Notice areas which have more than adequate lighting. For example, corridors and areas near windows are commonly overlit. **Remove unnecessary bulbs.**
- **Capture the power of the sun!** Consider remodelling possibilities of skylights, skypipes, and rearranging furniture with windows in mind.
- **Photocell lighting sensors** turn on and off lights according to the amount of daylight available.

Steps to reduce lighting use at your desk:

- ◇ Try task lighting and reduce overhead lighting.
- ◇ Clean light fixtures and bulbs twice a year because dirty fixtures significantly reduce light output and cost money.
- ◇ Turn out your lights...



Did you know?

- Indoor lighting use is highest during the daytime hours of 9-5. An odd fact when you consider that light bulbs were invented so we could see in the dark!
- According to the EPA, 25 to 30 percent of a building's energy bill goes to lighting.

**Remember:
Each of us
makes a
difference!**



Heating and Cooling

“Heat generated from inefficient lighting, computers, and other office equipment accounts for much of the air conditioning needs of campus offices and administrative buildings. Energy efficient office equipment and lighting not only cost less to operate but also radiate less heat, considerably reducing building cooling costs.” (Julian Keniry- Ecodemia)

What you can do:

- Dress appropriate to the season and keep thermostats set to 67-69 degrees in the winter, and 75-77 degrees for air-conditioned spaces in the summer.
- During the winter, open blinds, drapes and curtains to let sun in. At night or on days with no sun, close them to keep the heat in.
- During the summer, close blinds, drapes and curtains to block direct sun.

Recycling Saves Energy!

Did you know that one recycled beverage can saves enough energy to operate a TV set for three hours?

In 1976, CU-Boulder students created one of the nation's most successful university recycling programs. Every year, students, faculty and staff recycle over 2.5 million pounds of materials on campus which saves the equivalent of: 17,500 trees; 413,000 gallons of gas; 83 million gallons of water; 704,000 pounds of air pollutants; 43 million kilowatt hours of electricity; and 73,000 cubic yards of landfill space.. In and around all campus buildings, you can recycle **co-mingled containers** (glass, aluminum, steel, #1 & #2 plastic bottles, milk cartons, juice boxes, and empty aerosol cans), **office paper** (computer and notebook paper, envelopes, junk mail, pastel paper), **news-paper, magazines and catalogs**, and **corrugated cardboard**. CU Recycling is a partnership between UCSU, Facilities Management, the Department of Housing and YOU!



Contacts:

CU Environmental Center,
Generation Green

303-492-8308, UMC 355 or
www.Colorado.EDU/ecenter/

Office of Resource Conservation
303-492-1425
www.colorado.edu/conservation

CU Recycling Services
303-492-8307, UMC 355 or
www.colorado.edu/cure

Energy Star Program
1-888-STAR-YES
www.energystar.gov

Information about other

'Green Campus' Initiatives

- SUNY-Buffalo
<http://wings.buffalo.edu/ubgreen>
- Oberlin College
www.oberlin.edu/~envs
- Tufts University- Climate Initiative
www.tufts.edu/tie/tci
- AASHE
www.aashe.org

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EPA, *Sleeping and Saving with Energy Star Labelled Office Equipment*, 1998.

Alice Hubbard and Clay Fong, *Community Energy Workbook: A Guide to Building a Sustainable Economy*, 1995.

Julian Keniry, *Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century*, 1995.

Walter Simpson, *UB Guide to Green Computing*.

A.K. Townsend, *The Smart Office: Turning your Company on its Head*, 1997.