

HOW TO...

SAVE ENERGY IN LABORATORIES



SUSTAINABILITY OPPORTUNITY

As one of the world's premier research institutions, Stanford is home to approximately 2 million square feet of laboratory space and over 5,000 different research projects at any given time. The cutting-edge research that takes place in these facilities often requires energy intensive equipment that must be run continuously to maintain the integrity of the research. Additionally, because of stringent Environmental Health and Safety (EH&S) regulations, labs utilize a host of other systems requiring significantly more energy to operate than you might find in a standard academic building. Thus, lab space often represents a crucial opportunity to increase efficiency and reduce waste.

HERE'S HOW:

1) Equipment

- Turn off lab equipment when not in use, including centrifuges, water baths, microscopes, etc. Consider turning off any unused equipment if you will be out of the lab for more than an hour.
- **Install timers on lab equipment that is often left on but could be turned off at night and on the weekends without interfering with your research. Examples include heating blocks, centrifuges, PCR machines, and printers. The [Cardinal Green Labs](#) program installs timers free of charge.**
- Activate power management settings on computers. Use [Stanford's Big Fix program](#) to automatically put computers to sleep when not in use.
- When purchasing new equipment, choose equipment that carries the [ENERGY STAR](#) label when applicable (e.g. refrigerators, ice machines, computers)

2) Ultra Low Temperature Freezers

- **When purchasing a new ultra-low temperature freezers, consider purchasing an energy efficient model. The [Cardinal Green Labs](#) program offers rebates for replacing old freezers with energy efficient models.**
- Dust coils behind refrigerators and clean the door seal to improve fridge efficiency.
- Keep items in fridges well-labeled, and clear out materials from past research on a regular basis.
- Consolidate into a single fridge/freezer, or share with neighboring labs to reduce the number of fridges and freezers required.
- Consider chilling up freezers from -80 to -70 degrees. Almost all nucleic acids, proteins, bacteria, and viruses can be safely stored at -70.
- **Try room temperature sample storage for DNA and RNA samples. The [Cardinal Green Labs](#) program offers full rebates for room temperature storage starter kits.**

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3) Lighting

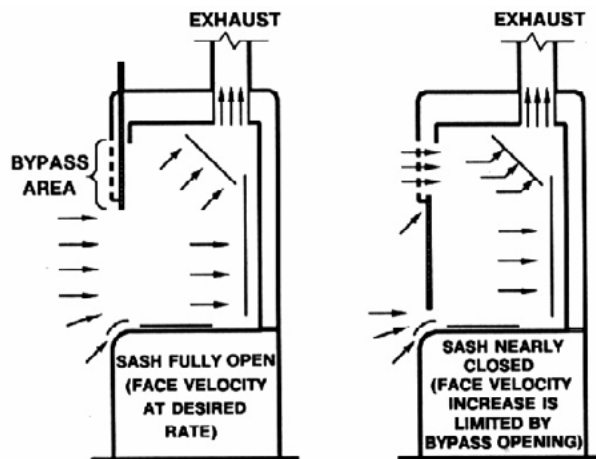
- Turn off overhead lights when daylight is adequate or when you are the last person to leave the room.
- Switch to LED light bulbs when a bulb needs replacing, such as for a task lamp or solid-state lighting for microscopes.
- If the space is too bright, work with the building manager to de-lamp some of the overhead lights.

4) Fume Hood Energy Use

- Fume hoods draw air out of the room even when turned off, so adjust sashes to the minimum position when fume hoods are not in active use to reduce fan energy.
- Operate hoods with the sashes at proper heights for safety. The lower the sash height, the safer the fume hood.



Replace task lamps and microscope lighting with LEDs when the existing light bulbs stop working.



Stanford's fume hoods are engineered to use less energy when the sashes are left in the minimum position when not in use.

MORE INFORMATION

CARDINAL GREEN LABS PROGRAM

<https://sustainable.stanford.edu/cardinal-green/cardinal-green-labs>

CONTACTS

Cardinal Green Labs Program: Annalise Di Santo, Building Sustainability Analyst, adisanto@stanford.edu
Sustainability Programs: Fahmida Ahmed, Director, fahmida@stanford.edu



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