

## Be Prepared for Power Failures

### General

Electrical power, like any other part of the infrastructure on campus, can fail either in an isolated incident (tripped circuit breakers or blown fuses), or as part of a larger event (regional power outage or earthquake). When power failures occur, health and safety issues that require attention may arise. This fact sheet provides building managers and coordinators, department safety coordinators, principal investigators, managers, and others with basic guidance and resources to address issues related to power failure emergency and response.

If there is a power failure in your building, building management should immediately contact UC Berkeley Physical Plant Campus Services (PP-CS) dispatch at 642-1032 and let them know of the problem. Do not continue to report once dispatch has been informed, because they may be taking emergency calls from other buildings. During a power outage, the elevators may not work, and removing persons from elevators is a high priority for PP-CS crews.

If an electrical outage occurs over a wide area, the Emergency Operations Center (EOC) may activate to manage the campus response. In support of the EOC, Emergency Support Function (ESF) operations centers may also activate, either independently or under the direction of the EOC as needed, to support essential operations and response activities.

For general information about a widespread power failure, listen to the campus radio station: KALX—90.7 FM. For additional information and updates, contact your Building Coordinator.

Emergency procedures for a power failure are outlined in the Building Emergency Plan (BEP) for each campus building.

<http://ehs.berkeley.edu/bldgdept.html>

### Advance Preparation for Power Failures

Contact PP-CS or your Building Coordinator to find out what emergency power is available in your building, and connect all essential equipment to these emergency power circuits. Some buildings have permanently installed emergency backup generators. These generators typically serve critical functions such as emergency lighting, and may have additional service capacity. PP-CS manages and maintains these generators, along with a small number of portable units that may be available to keep critical operations going during power interruptions.



## Advance Preparation for Power Failures

Make a list of equipment that must be reset or restarted once power returns, and keep instructions for doing so in a nearby place. Equipment that operates while unattended should be programmed to shut down safely during a power failure and not to restart automatically when power returns.

**Laboratory Buildings** - Each laboratory should designate an emergency contact person who can be reached 24 hours a day. This person should be knowledgeable about all major operations in the laboratory. The name and contact information for this person should be given to the appropriate Department Safety Coordinator and Building Coordinator, and posted on all entrances to the laboratory. Alternate contacts should also be listed. (Call EH&S to find out who the Department Safety Coordinator and Building Coordinator are for your building.)

Ensure that all fume hoods have a physical, non-electrical indicator that demonstrates whether they are running. A simple solution is to hang a strip of tissue paper that will flutter when the hood is in operation. The Magnehelic hood airflow monitors are also non-electrical. Know how to check your Magnehelic to tell if your hood is operating properly.

<http://ehs.berkeley.edu/hs/52-fume-hoods/92.html#mechanical>

If your building has items that must be kept cold, identify an emergency source of dry ice.

Note: Refrigerators and freezers will maintain their temperature for several hours if they are not opened. Do not use dry ice in walk-in refrigerators or other confined areas because hazardous concentrations of carbon dioxide gas will accumulate.

## Power Failure Emergency Contacts

**Life-Threatening Emergencies** - In the case of any life-threatening situation, including fires, earthquakes, dangerous chemical releases, or serious injuries or illnesses, evacuate the building immediately by following your Building Emergency Plan procedures. If there are any injuries or illnesses that require care beyond first aid, contact UCPD immediately to coordinate the appropriate emergency medical service.

Contact	How to Reach
UCPD (Berkeley Fire Dept., Emergency Medical Service)	(510) 642-3333



**Power Failure  
Emergency  
Contacts**

**Hazardous Material Spills** - If hazardous material has been spilled, or radioactive material has been released, evacuate and isolate the area, and contact the Office of Environment, Health & Safety (EH&S). After business hours, EH&S can be reached through the UCPD dispatch by calling the non-emergency phone number.

Contact	How to Reach
EH&S	(510) 642-3073 [M-F, 8-12, 1-5]
UCPD (Non-emergency)	(510) 642-6760 [anytime]

**Backup Power Failure** - If emergency power generators fail, contact PP-CS. Repair calls will be prioritized based on their impact to life safety.

Contact	How to Reach
PP-CS	(510) 642-1032

**Fire Alarm  
Systems**

Fire alarm systems have backup batteries that will last approximately 24 hours. If power has not returned within this time, EH&S should be contacted to evaluate the system. If the building is deemed safe for occupation by EH&S after the battery has failed, the Campus Fire Prevention Staff will prescribe fire watch procedures to the building manager.

**Emergency  
Lighting**

Emergency lighting provides enough light for a safe exit. Batteries in these lights may last up to 90 minutes, but could fail sooner than that. It is important that lighting in hallways, stairwells, and corridors is monitored during a power outage to ensure that occupants can exit safely. If natural or emergency lighting in these areas diminishes to unsafe levels, then the building needs to be evacuated. Occupants working in areas located below ground level, without natural lighting, should be made aware that the emergency lights may only last 90 minutes, and should be prepared to evacuate before those lights fail.

**While Power is Out**

Check equipment connected to emergency power sources. In some cases, it may take as long as 60 seconds for the emergency power to activate after a power failure. Do not connect additional items to emergency outlets during a power failure.

Disconnect all equipment that runs while unattended, and turn off unnecessary lights and equipment. This will reduce the risk of power surges and other potential damage or injury that could result when the power comes on unexpectedly.



## While Power is Out

**Laboratory Buildings** - Shut down experiments that involve hazardous materials or equipment which automatically restarts when power resumes.

Make sure that experiments are stable and do not create uncontrolled hazards, such as dangerous vapors in a nonfunctioning fume hood.

Check all fume hoods. Stop any operations that may emit hazardous vapors. Cap all chemical containers that are safe to cap, and then close the fume hood sashes. Warmer interior air may cause a chimney effect, which can help to contain and exhaust contaminated air in the hood. Leave and post the room and contact EH&S if you notice any odors or physical symptoms.

Check items stored in cold rooms and refrigerators. You may need to transfer vulnerable items to equipment that is served by emergency power.

## When to Evacuate

Evacuate immediately if the building fire alarm sounds, or when requested to by the fire department or other emergency responders. Building Coordinators and department managers may authorize evacuation as they are familiar with building-specific operations, potential hazards, and staff needs. Please consult your supervisor if you think it is appropriate to evacuate your building, but an evacuation has not yet been ordered.

When the interior lights go out, most normal indoor work becomes difficult to accomplish. In many cases, however, there are some work activities one can perform until power is restored. If there is enough light to see, it is safe to continue non-hazardous work inside the building, so long as emergency egress (exit) signs are still functioning.

**Laboratory Buildings** - If hazardous materials are used in your building, and the mechanical ventilation system has failed, it is important to cease hazardous operations. Contact your department office or Building Coordinator for additional information about the outage, and to find out if evacuation is called for (EH&S can help make this determination).

## Re-occupancy

For buildings without hazardous materials, approval from EH&S is not required for re-occupancy; Once power is restored, occupants should conduct a sweep to verify that everything is okay. If the building does not have mechanical ventilation during a power outage, natural ventilation can be facilitated by opening outside windows.



**Re-occupancy**

**Laboratory Buildings** - If hazardous materials had been in use in fume hoods, permission to re-occupy must be granted by EH&S in consultation with building management. In most cases, it is recommended that a building remain unoccupied at least 30 minutes after the mechanical ventilation systems have resumed function. This time frame will allow for approximately three cycles of air exchange in each room that is equipped with mechanical ventilation.

Reset/restart/check equipment after EH&S allows re-entry into the building. In particular, check that the air flow of your fume hood has been restored. Check the hood airflow monitor. If the hood does not have proper airflow, post a warning and do not use hazardous materials in that hood until maintenance crews reset the system.

In many cases, fume hood exhaust fans on the roof will not restart automatically. Keep fume hood sashes closed, and contact your Building Coordinator or PP-CS for a manual restart. The hood fan number may be listed on the hood, such as "HF#1." During a widespread power outage, it can take up to a day for PP-CS to get all of the exhaust fans on campus turned back on. Occasionally some hood fans are missed or do not restart, so it is important to confirm that air is flowing before using any hood.

If a refrigerator or freezer failed during the outage, keep the door closed until it returns to a safe working temperature.

Contact EH&S for guidance on biological or chemical hazards stored in failed refrigerators or freezers.

**Hazardous Equipment**

Some equipment, such as shop machinery, may cause injury if it recommences operation automatically when power resumes after an outage. Identify such potentially hazardous equipment before a power outage occurs. If power fails, assign an employee to disconnect such equipment from its power source, unless an immediate evacuation order has been issued.

**Data Backup**

Back up your computer files regularly, so as not to lose data when the power goes off suddenly. Use an Uninterruptible Power Supply (UPS) for critical machines such as servers.

**Other Emergency Planning Tips**

Planning ahead makes any emergency easier to handle. Take this opportunity to review your laboratory and building emergency procedures, before power failure strikes. In particular, read your Building Emergency Plan, which provides building-specific emergency response and evacuation information. Contact your Building Coordinator for a copy of the Building Emergency Plan. Call the Office of Emergency Management at (510) 642-9036 to find the name of your Building Coordinator. You may also want to print out this fact sheet and store it now, because it may not be accessible from the internet when the power is out.

